

# Northwestern

**Undergraduate Catalog  
2024–25**

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# **Undergraduate**

A private, nonprofit institution founded in 1851, Northwestern University is recognized nationally and internationally for the quality of its educational programs at all levels. Innovative teaching and pioneering research take place in a highly collaborative, interdisciplinary environment that combines the resources of a major research university with the level of individual attention of a small college.

Approximately 20,000 full- and part-time students are enrolled on Northwestern's lakefront campuses in Evanston and Chicago and branch campus in Qatar. More than 8,300 undergraduates study at the University's largest campus in Evanston.

The University's 3,300 full-time faculty members range from Nobel Prize laureates to Tony Award winners. In their ranks are members of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, the American Council of Learned Societies, and numerous other honorary and professional societies.

The some quarter-million alumni include Pulitzer and Nobel Prize laureates, Academy Award winners, and leaders in education, government, science, law, technology, medicine, media, and other domains.

## **A Historical Overview**

A year after nine Chicagoans met to establish a university "of the highest order of excellence" to serve the people of America's Northwest Territory, Northwestern University was officially incorporated in 1851. In 1853 the founders purchased a 379-acre tract of farmland along Lake Michigan 12 miles north of Chicago as a site for the new university. The town that grew up around Northwestern was named Evanston in honor of John Evans, one of the University founders.

Northwestern began classes in fall 1855 with two faculty members and 10 male students. In 1869 it enrolled its first female students, thereby becoming a pioneer in the higher education of women. By 1900 the University was composed of a liberal arts college and six professional schools, including the schools of law and medicine, with a total of 2,700 students. In the 20th century, schools were added in management, engineering, education, journalism, and continuing studies. With the establishment of the Graduate School in 1910, Northwestern adopted the German university model of providing graduate as well as undergraduate instruction and stressing research along with teaching. Recent years have seen a proliferation of academic programs and the opening of the Qatar campus.

Today Northwestern enjoys a position as one of the country's leading private research universities.

## **The Undergraduate Experience**

### **Academic Excellence**

Despite their relatively small numbers, Northwestern undergraduates enjoy a great range of educational choices, including more than 200 formal academic concentrations as well as opportunities to do research and special projects, study abroad, and pursue internships. Students frequently complete two majors or two degrees, and some construct and receive approval for their own programs of study. About three-fourths of Northwestern's undergraduates engage in internships, practicums, paid cooperative education programs, applied research, study abroad, and other off-campus experiences, often for academic credit. All benefit

from a level of faculty involvement unusual for undergraduates at major universities, with faculty teaching a large proportion of classes as well as inviting students to participate in research.

At the heart of a Northwestern education is the belief that a solid foundation in the liberal arts is essential, regardless of one's future plans. Students in all six undergraduate schools may take courses in science, mathematics and technology, individual and social behavior, historical studies, the humanities, and fine and performing arts. Moreover, Northwestern's emphasis on effective communication, regardless of field of study, fosters the ability to think analytically and write and speak clearly and persuasively.

Northwestern's many interdisciplinary research centers have profound implications for undergraduate education. Their research often alters theory and practice within an academic discipline and leads to new curricula. More immediately, many research centers have special programs for undergraduates, who may apply for research grants to fund independent scholarly projects. In recent years many new research centers have been established, especially in science and technology. See [research.northwestern.edu](http://research.northwestern.edu) for a list of the University's research centers.

Other academic resources available to Northwestern students include the 10th-largest library collection among US private universities ([www.library.northwestern.edu](http://www.library.northwestern.edu)). Northwestern University Information Technology supports students' academic needs with extensive online services, computer labs, and wired and wireless access from nearly anywhere on campus ([it.northwestern.edu](http://it.northwestern.edu)).

Underpinning the breadth of a Northwestern education is the quarter system, which gives students the opportunity to take more courses than under a traditional semester system. Most undergraduates attend for three quarters each year (fall, winter, and spring). They typically take 4 courses each quarter and 12 courses in an academic year.

### **Outside the Classroom**

In its extracurricular offerings as well as in its academic programs, Northwestern encourages its students to develop holistically and to prepare for life in a diverse, interconnected, and rapidly changing world.

Supported by the Center for Student Involvement, the more than 500 extracurricular groups include organizations devoted to service on campus and in the community, cultural awareness and support, musical and theatrical performance, entertainment programming, political activism, career preparation, and countless mutual interests. The full list is available at [northwestern.campuslabs.com/engage](http://northwestern.campuslabs.com/engage).

A charter member of and the only private university in the Big Ten conference, Northwestern sponsors 19 intercollegiate athletic teams (8 men's and 11 women's), as well as intramural, club, informal, and instructional sport and fitness programs. Fitness centers provide state-of-the-art facilities for exercise and recreation. Northwestern students even have their own beach and the opportunity to take sailing lessons.

About 4,000 undergraduates live in University-owned on-campus student residences that range widely in size, age, character, and suite arrangements; another 800 live in fraternity or sorority houses, and the remainder live off campus. Services available to undergraduates include counseling and psychological services, healthcare, career advising, and assistance in identifying employment, internship, and external-funding opportunities. Specialized offices and resource centers serve students with disabilities, LGBTQIA students, international students, members of various religious denominations, women, and African American, Asian/

Asian American, and Hispanic/Latino students. For all programs offered by the Division of Student Affairs, see [northwestern.edu/studentaffairs](http://northwestern.edu/studentaffairs).

In addition to enjoying numerous opportunities on campus, students benefit from Northwestern's location in the first suburb north of Chicago. Downtown Evanston offers restaurants, shops, and a multiplex movie theater, and the cultural, entertainment, and sporting events of America's third-largest city are just a short train ride away.

## Student Demographics

Northwestern recruits students of demonstrated academic achievement from diverse social, ethnic, and economic backgrounds. More than 90 percent of applicants rank in the top 10 percent of their high school classes, and Northwestern's National Merit Scholar enrollment rate has recently ranked among the nation's highest. About one in ten applicants is accepted.

All 50 states and more than 70 countries are represented among the undergraduate student body. International students make up roughly 10 percent of the class of 2019. More than 43 percent of the first-year class come from underrepresented backgrounds. About 62 percent of students receive financial assistance.

Both the federal government and the National Collegiate Athletic Association use as a measurement for reporting purposes the graduation rates of entering classes over six continuous years. Such rates at Northwestern have remained above 90 percent since 1991–92. See [www.registrar.northwestern.edu/academic\\_records/enrollment\\_and\\_graduation\\_statistics.html](http://www.registrar.northwestern.edu/academic_records/enrollment_and_graduation_statistics.html) ([https://www.registrar.northwestern.edu/academic\\_records/enrollment\\_and\\_graduation\\_statistics.html](https://www.registrar.northwestern.edu/academic_records/enrollment_and_graduation_statistics.html)).

## Campuses and Schools

The six undergraduate schools on the Evanston campus offer the programs and courses described in their respective sections of this catalog. Undergraduate study may lead to the bachelor's degree as a final academic goal or to graduate or professional study.

Northwestern is accredited by the Higher Learning Commission ([www.hlcommission.org](http://www.hlcommission.org) (<https://www.hlcommission.org>)). Some schools have additional accreditation, as noted in the following sections.

### Evanston Campus

The schools and other institutional divisions, in order of establishment, are as follows:

- The Judd A. and Marjorie Weinberg College of Arts and Sciences (1851) offers the degree of bachelor of arts. Majors and minors are available through departments and interdisciplinary programs spanning the arts and humanities, foreign languages, mathematics and statistics, the natural sciences, and the social sciences. Through Northwestern University School of Professional Studies, Weinberg College also offers the degrees of bachelor of philosophy and bachelor of science in general studies.
- The School of Communication (1878), with departments of communication sciences and disorders, communication studies, performance studies, radio/television/film, and theater, offers a bachelor of science in communication degree and a bachelor of arts in communication degree. Through Northwestern University School of Professional Studies, the School of Communication offers the bachelor of philosophy in communication. The school also offers the degrees of master of science in communication, health

communication, leadership for creative enterprises, nonclinical audiology, and speech, language, and learning as well as the doctor of audiology degree. Its programs are accredited by the American Speech-Language-Hearing Association and the National Association of Schools of Theatre.

- The Henry and Leigh Bienen School of Music (1895) offers the degrees of bachelor of music, bachelor of arts in music, and bachelor of science in music. In its graduate division the school offers the master of music and doctor of musical arts degrees.
- The J. L. Kellogg School of Management (1908) offers undergraduate certificates in financial economics and managerial analytics as well as the master of business administration degree. MBA students may choose from many majors, which are listed at [kellogg.northwestern.edu/faculty/academics/majors](http://kellogg.northwestern.edu/faculty/academics/majors). In addition to the full-time MBA program, Kellogg offers a part-time evening or weekend MBA program on Northwestern's Chicago campus, an executive MBA in Evanston and Miami, and international executive MBA programs in Canada, Europe, the Middle East, and Asia. There is also a PhD program; see [kellogg.northwestern.edu/programs/doctoralprogram](http://kellogg.northwestern.edu/programs/doctoralprogram). In addition, a wide range of nondegree executive education courses are offered at the school's James L. Allen Center on the Evanston campus as well as in Miami. Kellogg is accredited by the American Assembly of Collegiate Schools of Business.
- The Robert R. McCormick School of Engineering and Applied Science (1909) offers the bachelor of science degree in applied mathematics, biomedical engineering, chemical engineering, civil engineering, computer engineering, computer science, electrical engineering, environmental engineering, industrial engineering, manufacturing and design engineering, materials science and engineering, mechanical engineering, and integrated engineering studies. All departments offer advanced study for graduate students. The McCormick School also offers master's degrees in analytics, biotechnology, engineering management, information technology, product design and development management, and project management. Select McCormick programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.
- The Graduate School (1910) administers advanced programs leading to the degrees of doctor of philosophy, master of arts, master of fine arts, master of public health, and master of science. Degree requirements and descriptions of individual graduate degree programs and curricula can be found through the school's website, [tgs.northwestern.edu](http://tgs.northwestern.edu) (<https://tgs.northwestern.edu>).
- Summer Session (1920) provides summer programs for undergraduate, graduate, and visiting students.
- The Medill School of Journalism, Media, Integrated Marketing Communications (1921) offers the bachelor of science degree in journalism, master of science degrees in journalism and integrated marketing communications, and an undergraduate certificate in integrated marketing communications.
- The School of Education and Social Policy (1926) offers the bachelor of science degree in education and social policy with concentrations in elementary teaching, human development in context, learning and organizational change, secondary teaching, learning sciences, and social policy. It offers master of science degree programs in education (MSEd) with concentrations in elementary and secondary teaching; learning sciences and educational studies; in higher education administration and policy (MSHE); and in learning and organizational change (MSLOC). School programs administered by the Graduate School offer PhD degrees in human development and

social policy and in learning sciences. Its teacher education programs are accredited by the Illinois State Board of Education.

## **Chicago Campus**

Schools and institutional divisions on the Chicago campus, in order of establishment, are as follows:

- The Feinberg School of Medicine (1859) offers the degrees of doctor of medicine, doctor of physical therapy, master of medical science, master in prosthetics-orthotics, and bachelor of science in medicine. High school graduates accepted for the Honors Program in Medical Education can receive a Feinberg MD degree seven or eight years after they enter Weinberg College, the McCormick School, or the School of Communication. The Feinberg and McCormick Schools cooperate in biomedical engineering programs; joint degree programs with the Graduate School and the Kellogg School offer an MD degree as well as MA, MS, MPH, MBA, and PhD degrees. The Feinberg School has accreditation from the Liaison Committee on Medical Education, Accreditation Council for Continuing Medical Education, American Psychological Association, American Board for Certification in Prosthetics and Orthotics, American Physical Therapy Association, and Accreditation Council for Graduate Medical Education.
- The Northwestern Pritzker School of Law (1859) offers the degrees of juris doctor (JD), master of laws (LLM), master of studies and LLM in international human rights, LLM in taxation, master of science in law, and doctor of juridical science. An accelerated JD program allows select motivated students to complete the JD in two calendar years. The Pritzker School and the Kellogg School offer a joint degree program allowing students to earn both JD and MBA degrees in three years. Another joint program with Kellogg permits international and foreign-trained students to earn an LLM degree and a certificate in business administration in one year. Students also may participate in a five-year program to earn a JD and a PhD in one of the social sciences. In addition, the Pritzker School offers an LLM degree to executive students in Seoul, South Korea; Madrid, Spain; and Tel Aviv, Israel. The school is accredited by the American Bar Association and the Association for American Law Schools.
- Northwestern University School of Professional Studies (1933) offers career-focused degree and certificate programs for working adults. Classes are offered online and in the evening on the Chicago and Evanston campuses. The school offers a range of master's degrees; an online bachelor of science degree; graduate, post-baccalaureate, and professional development certificates; as well as courses leading to the degrees of bachelor of philosophy and bachelor of science in general studies, conferred by Weinberg College; and the degree of bachelor of philosophy in communication, conferred by the School of Communication. For a complete list of degrees awarded, please visit [www.registrar.northwestern.edu/academic\\_records/nu\\_degrees\\_awarded.html](http://www.registrar.northwestern.edu/academic_records/nu_degrees_awarded.html). SPS also administers Summer Session programs for the University and is the home of the Center for Public Safety, the Osher Lifelong Learning Institute, and the National Resource Center for Osher Lifelong Learning Institutes.

## **Northwestern University in Qatar**

Northwestern's 12th school and only overseas campus is based in Education City, Doha, Qatar. In addition to liberal arts instruction, the school offers bachelor of science degrees conferred by the Medill School of Journalism, Media, Integrated Marketing Communications and the School of Communication. For more information about Northwestern University in Qatar, please visit [www.qatar.northwestern.edu](http://www.qatar.northwestern.edu).

# PRIVACY & DISCLOSURES

This catalog for the academic year beginning in Fall 2024 contains University regulations and information about the programs and courses offered by the Judd A. and Marjorie Weinberg College of Arts and Sciences; School of Communication; School of Education and Social Policy; Robert R. McCormick School of Engineering and Applied Science; Medill School of Journalism, Media, Integrated Marketing Communications; and Henry and Leigh Bienen School of Music and about cross-school undergraduate programs.

Failure to read this catalog does not excuse a student from knowing and complying with its content.

Northwestern University reserves the right to change without notice any statement in this catalog concerning, but not limited to, rules, policies, tuition, fees, curricula, and courses. In exceptional circumstances, Northwestern University reserves the right, at its sole discretion, to waive any documentation normally required for admission. It also reserves the right to admit or deny a student admission whenever it believes that it has sufficient evidence for the decision.

## Access to Student Records

Under the Family Educational Rights and Privacy Act, all students have certain rights with regard to their educational records. Northwestern's student records policy is available at [www.registrar.northwestern.edu/academic\\_records/FERPA\\_policy.html](http://www.registrar.northwestern.edu/academic_records/FERPA_policy.html).

Students' rights under FERPA include

- Inspect and review their educational records at Northwestern University
- Request an amendment of their records to ensure that the records are not inaccurate, misleading, or otherwise in violation of privacy or other rights
- Consent to release or to restrict disclosure of personally identifiable information contained in their educational records, except under certain limited circumstances when, by law, consent is not required
- File a complaint with the US Department of Education concerning alleged failures by Northwestern University to comply with FERPA requirements

## The University's Use of Email

Email is the University's mechanism for official communication with students, and Northwestern has the right to expect that students will read official email in a timely fashion.

All students are assigned a "u.northwestern.edu" address that is maintained in the University email directory. Northwestern provides a convenient mechanism for students who want to forward email from the University address to another email address of their choice, but students assume the risk of forwarding email. Failure to receive or read University communication that was sent to the "u.northwestern.edu" address does not absolve a student from knowing and complying with the content of the communication.

Faculty may use email for communicating with students registered in their classes so that all students will be able to comply with course requirements.

## Requirement to Provide Emergency Information

For the safety and security of our students, Northwestern requires all new students to provide the following emergency information in our student information system, CAESAR (<https://caesar.northwestern.edu/>) and confirm it annually:

- **Emergency Notification Phone Number (required):** A phone number where the student themselves can be reached in the event of a campus emergency – most likely a cell phone number. The University will send recorded voice and text messages to this number if necessary.
- **Current / Local Address (required):** Where we can find the student in the event of a local emergency.
- **Emergency contact (required):** Someone who can make medical decisions on the student's behalf.
- **Missing Person Contact (optional):** The best person for the University to contact if we believe the student to be missing.

Students must enter, update or confirm the three pieces of required emergency information by the deadline (usually in mid-September) each year to avoid a registration hold. Registration holds prevent students from registering for classes or changing registration until the required three data elements are up to date.

## Nondiscrimination Statement

Northwestern University does not discriminate or permit discrimination by any member of its community against any individual on the basis of race, color, religion, national origin, sex, pregnancy, sexual orientation, gender identity, gender expression, parental status, marital status, age, disability, citizenship status, veteran status, genetic information, reproductive health decision making, or any other classification protected by law in matters of admissions, employment, housing, or services or in the educational programs or activities it operates. Harassment, whether verbal, physical, or visual, that is based on any of these characteristics is a form of discrimination. Further prohibited by law is discrimination against any employee and/or job applicant who chooses to inquire about, discuss, or disclose their own compensation or the compensation of another employee or applicant.

Northwestern University complies with federal and state laws that prohibit discrimination based on the protected categories listed above, including Title IX of the Education Amendments of 1972. Title IX requires educational institutions, such as Northwestern, to prohibit discrimination based on sex (including sexual harassment) in the University's educational programs and activities, including in matters of employment and admissions. In addition, Northwestern provides reasonable accommodations to qualified applicants, students, and employees with disabilities and to individuals who are pregnant.

Any alleged violations of this policy or questions with respect to nondiscrimination or reasonable accommodations should be directed to:

Northwestern's Office of Equity  
1800 Sherman Avenue, Suite 4-500  
Evanston, Illinois 60208  
847-467-6165  
[equity@northwestern.edu](mailto:equity@northwestern.edu)

Questions specific to sex discrimination (including sexual misconduct and sexual harassment) should be directed to:

Northwestern's Title IX Coordinator in the Office of Equity  
1800 Sherman Avenue, Suite 4-500  
Evanston, Illinois 60208  
847-467-6165  
TitleIXCoordinator@northwestern.edu

A person may also file a complaint with the Department of Education's Office for Civil Rights regarding an alleged violation of Title IX by visiting [www2.ed.gov/about/offices/list/ocr/complaintintro.html](https://www2.ed.gov/about/offices/list/ocr/complaintintro.html) (<https://www2.ed.gov/about/offices/list/ocr/complaintintro.html>) or calling 800-421-3481. Inquiries about the application of Title IX to Northwestern may be referred to Northwestern's Title IX Coordinator, the United States Department of Education's Assistant Secretary for Civil Rights, or both.

# ADMISSION

## Admission

### General Requirements for Admission

Northwestern University attracts and enrolls a student body of high ability that reflects a variety of talents, ideas, backgrounds, and experiences, thereby contributing to the diversity of the campus community.

Candidates for admission should demonstrate a level of performance in curricular and extracurricular areas that indicates they will be able to succeed in a competitive academic environment. In the selection of students, careful attention is given to the ability of each candidate as evidenced by academic records and the results of entrance tests as well as by character and personal qualities. The University attempts to select students who are committed to scholarship and who have shown a willingness to become involved in their expressed interest areas. In determining whether to accept a candidate, the University considers

- Secondary school record
- College record — required for transfer candidates
- Recommendations from school officials and other persons who have information pertinent to the candidate's probable success at Northwestern
- Results of standardized tests — Northwestern will remain test-optinal for first-year and transfer applicants in the 2024–25 admission cycle. Applicants may submit an SAT and/or ACT score if they wish, but scores are not required. The writing sections for these tests are optional.
- Supplemental Application — required of Bienen School of Music candidates
- Candidate's written statements
- Any other information received by the University that bears on the candidate's readiness for study at Northwestern

### English Proficiency for International Applicants

In addition to meeting all regular admission requirements, international students are required to present evidence of their English language proficiency. International applicants whose first language is not English, or whose schooling has not been in English, must submit results from a Duolingo English Test, IELTS/IELTS Indicator, or TOEFL/TOEFL iBT Special Home Edition (TOEFL ITP Plus for China Solution is not accepted).

### Required Subjects

A broad academic experience in high school is the best preparation for admission to Northwestern. Whatever fields of study students follow, the best foundation consists of reading, writing, and mathematics. The value of thorough training in fundamental subjects cannot be overemphasized.

In considering the academic record of a candidate for admission, the Office of Undergraduate Admission notes the subjects studied, the rigor of coursework taken, and the grades received. The student's record should include a minimum of 16 units. (A unit represents a course studied for one year.)

The subject recommendations in the following list represent the minimum requirements for entrance to the University. Allowances are made to permit students to pursue special areas of academic interest. Most applicants present more academic subjects than the minimum.

### Recommended Units

Weinberg College of Arts and Sciences; School of Communication; School of Education and Social Policy; Medill School of Journalism, Media, Integrated Marketing Communications; and Bienen School of Music: 16 units, divided among the following academic areas:

- English: 4 units
- Foreign language: 2 to 4 units
- Mathematics: 3 to 4 units
- Laboratory science: 2 to 3 units
- History/social studies: 2 to 4 units
- Electives: 1 to 3 units in the above academic areas

Students preparing for college are strongly advised to take four years of work in English with as much emphasis on composition as the curriculum allows. Two units of the same foreign language should be taken; three or four years are strongly recommended.

The McCormick School of Engineering and Applied Science requires a sound secondary school education as described above, with strong preparation in mathematics and science. Specifically recommended are

- Mathematics: 3½ to 4 units (the minimum requirements for mathematics include algebra [2 units], plane geometry [1 unit], and trigonometry [½ unit]; most entering McCormick first-year students will have taken calculus [1 unit])
- Science: 2 units (credit in both chemistry and physics is recommended)

Credit in other subjects should bring the total to 16 units or more, including 4 units of English and work in social studies and foreign languages.

### Admission Notification

Northwestern offers incoming first-year candidates a choice of two notification plans, Early Decision and Regular Decision. Early Decision is a binding admission commitment. Candidates accepted to Northwestern under Early Decision must withdraw all other university applications.

The table below outlines these plans, the notification plans for transfer students, and the financial aid application procedure, including deadlines and the forms available through the College Scholarship Service.

### Admission Procedure

To be considered for admission to Northwestern, candidates must complete the following steps:

- Complete the Common Application (<https://apply.commonapp.org/Login/?ma=184>), the Coalition Application (<https://app.scoir.com/app/signup/2800124/>), or the QuestBridge Application (<https://www.questbridge.org/college-partners/northwestern-university/>). Applications for admission may be submitted before candidates take standardized tests for college admission.
- Arrange with the officials of their high school to complete and forward the Secondary School Report to the Office of Undergraduate Admission. All candidates should have their records through the sixth semester (or equivalent) sent to Northwestern as early in the senior year as possible. Candidates should have seventh-semester grades (or equivalent) sent as soon as they are available.
- Submit applicable standardized tests as outlined in the General Requirements for Admission section and/or the English Proficiency for International Applicants sections in this chapter. Testing

deadlines can be found in the Application and Testing Deadlines table. If choosing to submit an SAT and/or ACT score, applicants may self-report the SAT and ACT scores, taking care to report their highest individual sections of the SAT and/or highest ACT composite/section score(s). Applicants are not obligated to report scores from all test dates, though are welcome to do so. Students who have been admitted with consideration of test scores and who choose to enroll will be required to submit official SAT or ACT test scores that correspond to the highest self-reported scores prior to matriculation. English proficiency scores may not be self-reported; these should be submitted officially via the testing company at the applicant stage.

- Present a supplemental application if applying for admission to the Bienen School of Music. For more information, visit the Undergraduate Auditions (<https://music.northwestern.edu/admission/undergraduate/auditions/>) webpage.

## **Application to Dual Bachelor's Degree Programs**

A student interested in taking advantage of the opportunity to receive bachelor's degrees from two different Northwestern undergraduate schools in five years must apply to both schools. It is possible to be admitted to only one or both schools since applicants are considered for each school separately.

Dual degree programs available include the following:

- BA/BS in Liberal Arts and Engineering\*
- BA/BMus in Liberal Arts and Music
- BA/BS or BS/BS in Communication and Engineering
- BA/BMus, BS/BMus, BA/BAMus, or BS/BAMus in Communication and Music
- BSED/BMus or BSED/BAMus in Education and Social Policy and Music
- BS/BMus or BS/BAMus in Engineering and Music
- BSJ/BMus in Journalism and Music
- BSED/BSJ in Education and Social Policy and in Journalism

*\*Interested students may apply to the BA/BS program in Liberal Arts and Engineering after enrolling.*

For descriptions of these and other dual bachelor's degree programs, see the Dual Bachelor's Degree Programs (p. 38) chapter of this catalog.

## **Special Admission Programs**

The following undergraduate programs at Northwestern have special application requirements.

### **Integrated Science Program**

A student wishing to be considered for Weinberg College's Integrated Science Program, which provides a rigorous background in the major scientific disciplines and mathematics and can lead to a bachelor of arts degree in three years, must complete the special ISP application (available at [isp.northwestern.edu/admissions/applying/](https://isp.northwestern.edu/admissions/applying/)). Applicants to the McCormick School of Engineering and Applied Sciences may also submit an ISP application, but doing the additional major in ISP along with engineering does not accelerate completion of the bachelor of science degree. Either the Common Application or the Coalition Application is also required of applicants.

For more information on ISP, see the Integrated Science Program (p. 345) section in the Weinberg College (p. 216) chapter of this catalog.

## **Mathematical Methods in the Social Sciences**

A student interested in Weinberg College's program in Mathematical Methods in the Social Sciences (MMSS), which is designed for students with high mathematical aptitude and strong interest in social problems and issues, must complete the special MMSS application (<https://www.mmss.northwestern.edu/admission/first-year-application.html>). Either the Common Application or the Coalition Application is also required. For more information on MMSS, visit this website (<https://www.mmss.northwestern.edu/>).

## **Application and Testing Deadlines: Notification Plans**

### **Regular Programs for Fall Quarter Matriculation**

Event	Early Decision	Regular Decision
First-year students enter in fall quarter. New undergraduates may not request matriculation for any other quarter.		
Apply by If taking SAT or ACT, take by	November 1 November test	January 2 December test
To apply for financial aid, file CSS PROFILE by  and file FAFSA by and submit tax materials by	December 1 December 5	February 1 February 5
Northwestern releases its decision by  Applicant's reply and nonrefundable tuition and housing deposits due by	Mid-December February 1	March 31 May 1

### **Transfer Students for Fall Quarter Matriculation**

Event	Regular Decision
Transfer students enter in fall quarter. New undergraduates may not request matriculation for any other quarter.	
Apply by (Space is limited in some programs.)	March 15 (soft deadline)
If taking SAT or ACT, take by (Scores from previous academic years are acceptable.)	March 15
Apply for financial aid by (Aid availability is limited; consult the Office of Undergraduate Admission.)	March 15

Northwestern releases decisions on a rolling basis through the end of May; applicant's reply is due within three weeks of receiving a preliminary credit evaluation.

## Advanced Placement

In nearly all areas Northwestern awards credit for Advanced Placement Examination scores of 5; in some cases credit is also awarded for scores of 3 and 4. Specific questions concerning Northwestern's advanced placement policies should be addressed to the Office of the Registrar or the school adviser. In some fields advanced placement and/or credit can be earned through appropriate performance on examinations administered by Northwestern departments.

Northwestern may award credit for distinguished performance on certain foreign national examinations, and the higher-level examinations of the International Baccalaureate. Students will receive credit only once for the same course of study even if mastery is demonstrated on multiple exams (e.g., mathematics AP and IB exams). Also, credit is awarded only for exams taken prior to matriculation at Northwestern.

Northwestern also may award credit for college courses taken by incoming first-year students before they enter the University. To qualify for such recognition, the courses must be similar to courses offered at Northwestern, must have been completed at a college or university whose accreditation is recognized by Northwestern, must not have been submitted in partial fulfillment of the normal secondary school graduation requirement, and must have been taken primarily by bona fide college students (i.e., high school graduates pursuing a college degree).

## Transfer Candidates

Students may be considered for admission as transfers from another college or university provided they are in good standing at their postsecondary institution and have maintained at least a B average in rigorous academic courses. Successful transfer applicants typically arrive at Northwestern having completed at least one academic year of full-time college coursework (24 semester hours or 36 quarter hours). If students have been enrolled full-time at any institution except Northwestern, they cannot be considered for admission as first-year candidates and must meet the criteria to apply as transfer candidates. Undergraduate schools at Northwestern enroll transfer students in the fall quarter only, and admitted transfer students may not defer their enrollment to any subsequent fall. Transfer students must meet the relevant provisions of the Undergraduate Registration Requirement (p. 27).

## Transfer Admission Procedure

To be considered for admission, transfer students must complete the following steps:

- Complete the Common Application (<https://apply.commonapp.org/Login/?ma=184>) or the Coalition Application (<https://app.scoir.com/app/signup/2800124/>).
- Request that a high school official forwards the complete high school report to the Office of Undergraduate Admission.
- If choosing to submit an SAT and/or ACT score, applicants may self-report the SAT and ACT scores, taking care to report their highest individual sections of the SAT and/or highest ACT composite/section score(s). Applicants are not obligated to report scores from all test dates, though are welcome to do so. Students who have been admitted with consideration of test scores and who choose to

enroll will be required to submit official SAT or ACT test scores that correspond to the highest self-reported scores prior to matriculation. English proficiency scores may not be self-reported; these should be submitted officially via the testing company at the applicant stage.

- Arrange with the registrar of each college previously attended to forward transcripts of record to the Office of Undergraduate Admission.
- Request a statement of good academic and social standing from the dean of students at the college from which the student is transferring.
- Present a supplemental application if applying for admission to the Bienen School of Music. For more information, visit the Undergraduate Auditions (<https://music.northwestern.edu/admission/undergraduate/auditions/>) webpage.
- Submit application for admission before the March 15 deadline.

## Evaluation of Credits

Transfer candidates who are accepted by Northwestern will receive a preliminary evaluation of the credits they have earned to date before matriculation, assuming all pertinent transcripts have been received. An official evaluation of credits earned will be made by the Office of the Registrar when an admitted student matriculates. To read the transfer credit policy, visit the Transfer and Test Credit ([https://www.registrar.northwestern.edu/graduation/transfer\\_and\\_test\\_credit.html](https://www.registrar.northwestern.edu/graduation/transfer_and_test_credit.html)) webpage.

## Professional Education Students

The Northwestern University School of Professional Studies, the University's continuing education division, offers an extensive range of programs and courses in Chicago, Evanston, and online for adult students seeking personal enrichment or professional mobility, preparation for graduate study, or pursuit of a degree or a certificate.

The school allows adults with a college degree, or some college credit and good standing, or a high school diploma but no prior college work to enroll in courses as students at large. Students who wish to earn a degree or a certificate should speak with an academic adviser about admission.

More information about the school is available on the School of Professional Studies website (<https://sps.northwestern.edu/>).

## Special Students

Properly qualified persons who demonstrate a need for certain courses required for their academic or professional advancement may apply to the University as Non-degree Special Students (NDSS). Applicants must present official transcripts of previous study and show evidence of successful academic achievement. Persons who do not meet these requirements should not apply.

Enrollment as a special student does not constitute admission to any degree program at the University, and credits earned as a special student may not be counted toward a degree at Northwestern. (Exception: Special students who subsequently become eligible for admission into the School of Professional Studies may apply these credits toward a degree.) Special Students are granted academic credit for coursework satisfactorily completed, and these credits may be transferred to another institution.

Special students are admitted with the understanding that they may register only after students working toward Northwestern degrees have registered. Some classes will be closed, and some schools or

departments may not accept nondegree students. These restrictions do not apply to Summer Session.

Special students are not permitted to enroll in 399 or 499 Independent Study courses.

All tuition and fees for special students are charged at the undergraduate rate. Complete instructions and application forms may be obtained from the:

Office of Special Students  
Northwestern University  
405 Church Street  
Evanston, Illinois 60208

For more information see the Non-degree Special Student (<https://sps.northwestern.edu/main/nondegree-special-students/>) webpage.

### **Admission Withdrawal**

If we do not receive your transcripts, disciplinary disclosure form, and, for students who included SAT or ACT scores in their application, official test scores by fall move-in, or if your final transcript indicates that your senior-year academic performance faltered seriously, our offer of admission may be withdrawn. Northwestern also reserves the right to take that action if it receives information that, in its judgment, reflects significantly on your character or your fitness for study or participation in the Northwestern community.

# FINANCIAL AID

The University provides financial aid on the basis of need as determined by the financial circumstances of the family. Federal loans or private scholarships are provided according to their own criteria and sometimes regardless of financial need. Financial aid consists of scholarships, part-time employment, and loan funding. These funds come from state, federal, institutional, and private sources. Students must apply for financial aid each year and might qualify for a combination of funds. Aid awards will be relatively consistent assuming the family financial circumstances are also relatively consistent.

Financial aid is available for a maximum of four years of full-time enrollment or its equivalent. Students admitted to a five-year dual degree program are eligible for a maximum of five years of full-time enrollment or its equivalent. The five-year dual degree programs approved for aid include liberal arts and music, communication and engineering, communication and music, education and music, engineering and music, or journalism and music. Students must be enrolled in the dual degree program by the end of their sophomore year. A student who later decides to pursue only one degree reverts to a maximum eligibility of four years. Students pursuing other dual degree opportunities that are not approved for aid would be eligible only for federal and state funding after four years of enrollment.

Regardless of whether a student receives financial aid in a given quarter or year, all enrollment counts toward the maximum time frame. Those needing aid beyond their maximum time frame must submit a request to the Office of Undergraduate Financial Aid. Those requests must be submitted at the time that the additional quarter is needed.

For information consult [undergradaid.northwestern.edu/information-for/prospective-students.html](http://undergradaid.northwestern.edu/information-for/prospective-students.html).

## Financial Aid Application

### Who Should Apply

Students who believe they cannot afford the full cost of a Northwestern education should apply for financial aid. International students might wish to apply for need-based financial aid, although financial need may factor into a final admission decision (whereas the review process is need-blind for US citizens and permanent residents). For more information see [admissions.northwestern.edu/tuition-aid/international-student-aid](http://admissions.northwestern.edu/tuition-aid/international-student-aid).

### Application Procedure

Applicants apply for financial aid at the same time as they are submitting the application for admission. Eligibility for aid cannot be determined until the University has admitted an applicant. Candidates should do the following:

- File the Free Application for Federal Student Aid (FAFSA) and the College Scholarship Service/Financial Aid PROFILE (CSS PROFILE) and request that the information is sent to Northwestern.
- Submit parent and student federal tax returns to the College Board's Institutional Documentation Service.
- File the applications as soon possible but not later than the dates indicated in the table titled Application and Testing Deadlines: Notification Plans (p. 12).

Returning students should consult the website [undergradaid.northwestern.edu](http://undergradaid.northwestern.edu) for reapplication instructions, deadlines, and updated policies.

Students are expected to consult their CAESAR account to verify that all required applications and additional information have been received by the Office of Undergraduate Financial Aid.

## Financial Aid Eligibility

For financial aid purposes:

Full-time in any given quarter is 3 to 5.5 units. Students who register for more than 5.5 units may be subject to overload tuition charges, and some schools require the approval of the dean before registering. Please note that financial aid is not available to cover overload tuition charges.

To receive aid from the University itself, students must be enrolled in at least 2 units. Students who enroll in fewer than 2 units might have limited eligibility for federal aid.

When providing financial aid information for the upcoming academic year, the financial aid office assumes that students will enroll full-time. Students who enroll at a level that is lower than full-time will have their aid reduced proportionally, and as a reflection of their reduced expenses.

All quarters of full-time registration are counted toward the maximum amount of financial aid eligibility (4 years in most cases). Students who enroll in a quarter that is less than full-time can request an extension of the 4-year eligibility maximum, if an extension is necessary. Any quarter of less than half-time status is not counted toward the 4-year maximum.

Students considering a change of registration status should contact the Office of Financial Aid to determine how the change might affect their aid awards or amount of eligibility. A detailed explanation of aid eligibility and policies is provided on the Office of Undergraduate Financial Aid's website, [undergradaid.northwestern.edu](http://undergradaid.northwestern.edu).

Students must maintain satisfactory academic (SAP) progress to remain eligible for financial aid. For Northwestern students, SAP means the successful completion of at least 67 percent of the course units attempted in an academic year (e.g., a student who registers for a total of 12 quarter-courses a year must complete at least 8). Withdrawn, incomplete, and repeated courses are counted as attempted course units.

In addition, students must maintain a cumulative GPA of 2.0 or better each year to meet SAP requirements. This GPA minimum may differ from a school's academic requirements, which are outlined in those chapters in this catalog.

Students can receive financial aid only for a maximum time frame, which is 150 percent of the program's published length as measured in academic units. All transfer credits are counted toward the maximum time frame. The total number of units required for a bachelor's degree is specified in each school's chapter in this catalog; the website of the Office of Undergraduate Financial Aid notes the maximum time frames calculated in terms of credits required for degree completion.

Students who fail to maintain SAP as described above will lose eligibility for financial aid. He or she will receive email notification from the Office of Undergraduate Financial Aid and will have the opportunity to appeal the cancellation. The appeal must be submitted to the Office of Undergraduate Financial Aid within two weeks of the notification from the office. In some cases, an appeal will not be considered until the student

has met with his or her academic adviser to determine an academic plan for completing the degree.

Those students whose appeals are approved will be placed in a probationary status. While on probation, students are eligible for one quarter of aid. At the end of the probationary period, students must then be meeting the cumulative standards of SAP. Students who are required to submit an academic plan must meet the conditions of the plan to remain eligible. Students who fail to meet these requirements as of the end of the probationary quarter will be ineligible for financial aid from that point forward.

More detailed information regarding satisfactory academic progress is available on the Office of Undergraduate Financial Aid's website.

# TUITION & PAYMENT

## Tuition and Fees

The cost of education at Northwestern is only partly covered by tuition charges. The balance is met by the income from invested funds and by the gifts of alumni and other supporters of the University.

Tuition and fees are listed on the Undergraduate Tuition (<https://www.northwestern.edu/sfs/tuition/undergraduate/>) section of the Student Finance website. Rates are subject to change without notice, and increases should be expected in subsequent years.

## Changes of Registration & Bills

No refund or bill reduction is made for dropped or swapped classes after the fifth day of the quarter. Bills will be adjusted for classes added after that date. The University's policies regarding enrollment changes and billing are listed on the Enrollment Changes & Billing (<https://www.northwestern.edu/sfs/payments/enrollment-changes.html>) section of the Student Finance website.

## Bills and Payments

Student Finance issues student bills. A due date is shown on each University bill, and payment must be received by that date. Failure to receive bills is not sufficient cause to extend due dates.

## Electronic Billing and Payment

Northwestern's preferred means of transmitting bills and receiving payments for tuition and fees is QuikPAY (<https://www.northwestern.edu/sfs/payments/methods/>). Free to students and authorized payers such as their parents, it provides email notification of new bills and allows online payments.

## Prepayment Plan

The University provides a tuition and fee installment Prepayment Plan (<https://www.northwestern.edu/sfs/payments/methods/prepay/>), which offers the benefit of prepaying the educational costs for the academic year in monthly payments without incurring finance or interest charges.

## VA Pending Payment Policy

For Northwestern students using U.S. Department of Veterans Affairs (VA) Post 9/11 GI Bill®<sup>1</sup> (Ch. 33) or Vocational Rehabilitation and Employment (Ch. 31) benefits, the University will not prevent enrollment, assess a late fee, deny access to resources available to other students, or require they secure additional funding while payment from the United States Department of Veterans Affairs is pending to the University.

To qualify for this provision, students may be required to:

- Produce the VA's Certificate of Eligibility by the first day of class;
- Provide written request to be certified;
- Provide additional information needed to properly certify the enrollment as described in other institutional policies

<sup>1</sup> GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at <https://www.benefits.va.gov/gibill> (<https://www.benefits.va.gov/gibill>).

## Additional Information

For more information about bills and payments, visit [northwestern.edu/sfs](http://northwestern.edu/sfs) or contact:

Student Finance  
555 Clark Street  
Evanston, Illinois 60208-1221  
[studentaccounts-ev@northwestern.edu](mailto:studentaccounts-ev@northwestern.edu)  
847-491-5224

## Financial Obligations

Students whose University bills are overdue may not be given an academic transcript and/or a diploma until all financial obligations are paid in full. Students whose accounts are overdue must pay a \$200 late payment penalty fee. The director of student finance may cancel or prevent the registration of a student whose bills are past due. A student is liable for any costs associated with the collection of his or her past-due account, including but not limited to collection agency costs, court costs, and legal fees.

## Tuition Benefit

### Supplemental Enrollment Benefit

Students who are unable to complete bachelor's degree requirements in 12 quarters of enrollment due to circumstances beyond their control, and who have paid full-time tuition to Northwestern for 12 quarters, may petition the Registration Requirement Appeals Committee to enroll in their final quarter at no additional tuition charge. Transfer students who have paid full-time tuition to Northwestern for 9 quarters are also eligible.

The Supplemental Enrollment Benefit is not available for students who choose a program that may take more than 12 quarters to complete, such as a dual degree program, or for students who have graduated. A final quarter at no charge is also not available for students whose pursuit of an optional program, such as study abroad, a double major, a minor, or extra coursework beyond that normally required for the degree, is the cause of the additional term(s) of enrollment. The benefit is intended to help students meet degree requirements only.

Appeals are considered by the Undergraduate Enrollment Committee, which consists of the associate provost for undergraduate education, the University registrar, a senior member of the financial aid staff, and two to three associate or assistant deans from different undergraduate schools. The deans serve three-year terms on a rotating basis. The Committee convenes on a regular basis to review appeals.

Students should consult their academic adviser(s) to discuss whether their situation is appropriate for this benefit or an appeal to Undergraduate Financial Aid. For instructions on preparing an appeal for the benefit, see the Office of the Registrar's website at <https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/supplemental-enrollment-benefit-appeal.html>

## Withdrawal Refunds

Students who must drop all classes for a term or more, commonly known as withdrawing or a term withdrawal, must immediately submit a withdrawal request available online here ([https://app.frevvo.com/frevvo/web/tn/registrar.northwestern.edu/login/?\\_method=post&embed=true](https://app.frevvo.com/frevvo/web/tn/registrar.northwestern.edu/login/?_method=post&embed=true)). The completed form, bearing the required signatures, must be submitted

to the Office of the Registrar in order for courses to be removed from the student's record and tuition owed to be recalculated.

Financial aid recipients should review the Financial Aid Office's withdrawal summary (<https://www.northwestern.edu/sfs/financial-aid-and-loans/withdrawing.html>) that describes when and to what degree Northwestern, federal, and third party aid loans, scholarships and grants may be retained by the student after withdrawal and when they must be returned in whole or part.

Tuition, less the tuition deposit, and refundable fees are refunded depending on the number of days student was enrolled in the quarter. Tuition deposits are not refundable. The full withdrawal refund policy can be found on the Student Finance website (<https://www.northwestern.edu/sfs/payments/withdrawing-from-the-university/>).

ADD TABLE HERE WITH REVISED HEADERS AND NEW POLICY BASED ON DAYS

Residence and meal contracts are signed for the full school year. Students who leave a residence before the end of the year are liable for the entire year's rent or for charges up to the date another student takes the vacated space. Meal charges are assessed until the end of the week in which withdrawal is in effect. Adjustments may be made at the discretion of Residential Services for students who for financial reasons must make room and board arrangements other than those for which they first contracted.

# PROGRAMS A-Z

## A

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- African Studies Adjunct Major (p. 228)
- African Studies Minor (p. 228)
- American Studies Major (p. 229)
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- Anthropology Minor (p. 235)
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## B

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## C

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- Earth and Planetary Sciences Minor (p. 286)
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- Economics BA/MA (p. 291)
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- Economics Minor (p. 290)
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- English Minor (<https://catalogs.northwestern.edu/undergraduate/arts-sciences/english/english-minor/>)
- Entrepreneurship Minor (p. 186)
- Environmental Engineering Degree (p. 165)
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## F

- Film and Media Studies Minor (p. 93)
- Financial Economics Certificate (p. 30)
- French BA/MA (p. 314)
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**G**

- Game Design + Media Arts + Animation Minor (p. 94)
- Gender and Sexuality Studies Major (p. 316)
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- General Engineering (p. 187)
- German Major (p. 322)
- German Minor (p. 323)
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- Global Health Studies Adjunct Major (p. 326)
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**H**

- Hebrew Studies Minor (p. 350)
- History Major (p. 339)
- History Minor (p. 342)
- Human Communication Sciences Major (p. 79)
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- Human Computer Interaction Certificate (p. 190)
- Human Development in Context Major (p. 120)
- Humanities Minor (p. 344)

**I**

- Industrial Engineering Degree (p. 194)
- Integrated Marketing Communications Certificate (p. 211)
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**J**

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**L**

- Latin American and Caribbean Studies Minor (p. 351)
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- Leadership (p. 31)
- Learning and Organizational Change Major (p. 125)
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- Linguistics BA/MA (p. 359)
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**M**

- Machine Learning and Data Science Minor (p. 196)
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- Music Education Major (p. 59)
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- Music Technology Minor (p. 55)
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- Music Theory Major (p. 64)
- Music Theory Minor (p. 64)
- Musicology Major (p. 65)
- Musicology Minor (p. 66)

**N**

- Native American and Indigenous Studies Minor (p. 378)
- Naval Science (p. 45)
- Neuroscience Major (p. 380)
- Neuroscience Second Major for ISP Students (p. 384)

**P**

- Performance Studies Major (p. 89)
- Performance Studies Minor (p. 90)
- Persian (p. 385)
- Philosophy Major (p. 391)
- Philosophy Minor (p. 392)
- Physics Major (p. 397)
- Physics Minor (p. 398)
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- Piano Major (p. 67)
- Political Science Major (p. 404)
- Political Science Minor (p. 406)
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- Premedical Scholars Program (p. 37)
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- Psychology Minor (p. 412)

**R**

- Radio/Television/Film Major (p. 94)
- Religious Studies Major (p. 415)
- Religious Studies Minor (p. 416)
- Russian (p. 416)
- Russian and East European Studies Minor (p. 423)

**S**

- Science in Human Culture Adjunct Major (p. 418)
- Science in Human Culture Minor (p. 418)
- Secondary Teaching (p. 130)
- Segal Design Certificate (p. 207)
- Slavic Languages and Literatures Major (p. 421)
- Social Policy Major (p. 141)
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- Sociology Major (p. 426)
- Sound Design Minor (p. 95)
- Spanish Major (p. 436)
- Spanish Minor (p. 436)
- Statistics Major (p. 440)
- Statistics Minor (p. 442)
- String Instruments Major (p. 69)
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**T**

- Theatre Major (p. 105)
- Theatre Minor (p. 107)
- Transportation and Logistics Minor (p. 33)

**V**

- Voice and Opera Major (p. 70)

**W**

- Winds and Percussion Instruments Major (p. 72)
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# REQUIREMENTS AND POLICIES

## Degrees, Academic Options, and Requirements

Undergraduate degree requirements are established by the faculties of each school. While the requirements consequently differ significantly by school, all students must pursue at least one major (their degree major) in their home school to earn a Northwestern undergraduate degree.

Students often also elect to pursue additional majors (p. 35), minors (p. 33), certificates (p. 29), and other special programs in schools other than their own, in addition to those from their home school. A program like this results in a single undergraduate degree with multiple majors.

Students may also apply and be admitted to multiple schools that offer pre-approved dual degrees (p. 38). A program like this results in two different undergraduate degrees conferred by the two different schools and often requires an additional year of study.

All undergraduate students must also meet the Undergraduate Registration Requirement (p. 27).

## Academic Advising

Academic advising is an essential component of an undergraduate education. All incoming students are assigned an academic adviser through their school. Returning students may obtain academic advice through their major department and from the dean's office of their school.

In addition to meeting with an academic adviser on a regular basis, students should routinely check their academic requirements—accessible via the CAESAR degree progress report and McCormick MAS—to ensure that they are meeting their degree requirements; students should promptly discuss any concerns about progress or discrepancies in the report with an adviser.

## Courses and Credit

Although the course listings in this catalog are as complete and exact as is possible at the time of publication, some changes may occur later, and courses may be dropped or added. The class schedule for each quarter is posted on CAESAR and contains a complete and updated listing of classes offered each quarter. The University reserves the right to cancel classes when necessary, including those for which there is insufficient enrollment.

## Undergraduate Course Credits and Quarters

Traditional undergraduate work in all the schools on the Evanston campus is on the quarter system. In a quarter-long course, students and faculty meet at least three hours per week, and students are awarded 1.0 unit of credit. Exceptions are courses that meet less than three hours per week, which carry less than 1.0 unit, and 15-week courses, which carry 1.5 units.

For purposes of transfer to other institutions or for certification stated in credit or semester hours, a quarter-long course bearing 1.0 unit of credit

is generally the equivalent of 2 and 2/3 (2.66) semester hours. In quarter hours, 1 quarter-long course is equal to 4 quarter hours of undergraduate credit.

Credit is only earned for passed classes.

## Credit for Repeated Courses

When courses designed to be taken once are repeated, all attempts remain on the student's record and all grades are used to compute the cumulative grade point average. However, credit is awarded only once, following the attempt that resulted in the highest grade. Similarly, when courses that allow more than one completion are repeated more than the maximum number of allowed times, all attempts remain on the record but credit is not awarded for units taken in excess of the maximum.

## Numbering System

A three-part alphanumeric code denotes all courses. PHYSICS 135-1 General Physics, PHYSICS 135-2 General Physics, PHYSICS 135-3 General Physics may be used as an example:

- The first part is the subject code indicating the area of study (PHYSICS in the example).
- The subject code is followed by the three-digit course number indicating the level of study.
  - 100–199 (as in the example) denote courses primarily for first-year students and sophomores, usually without college prerequisite.
  - 200–299 denote courses primarily for first-year students, sophomores, and juniors, sometimes with the prerequisite of a 100-level course in the same or a related department.
  - 300–399 denote courses primarily for juniors and seniors, with the prerequisite of junior standing or a 100- or 200-level course in the same or a related department.
  - 400–499 denote courses or seminars, primarily for graduate students, in which the major part of the work is not research; they may be open to advanced undergraduate students with permission.
  - 500–599 denote graduate courses or seminars in which the work is primarily research.
- The third part usually indicates whether the course is part of a sequence.
  - -0 = one-quarter course
  - -1,2 = two-quarter sequence
  - -1,2,3 = three-quarter sequence (as in the example)

Special characters identify certain groups of courses. If a course is taught only through a Northwestern study abroad program, the designation SA is included with the course number. Other designations may be used by the individual departments; see departmental listings for details.

## Graduate School Courses

Descriptions of Graduate School courses that are open to advanced undergraduate students may not be included in this catalog. Please see The Graduate School Catalog (<https://catalogs.northwestern.edu/tgs/courses-az/>).

# Enrollment

## Registration for All Students

Students register for classes using the CAESAR (<https://caesar.northwestern.edu/>) system.

- The dates of registration for each quarter are announced in advance. Late registration is permitted only through the fifth full day of classes in any quarter.
- Students will not earn credit for courses in which they are not officially registered. Auditing (p. 25) is not permitted.
- At the time of registration, students receive a warning message when enrolling in a class that they have already taken. Repeated courses all calculate in the GPA but credit is typically awarded only once.
- Waiver of prerequisites for admission to a course may be sought from the course instructor or department.

## Changes of Registration

Changes in registration in fall, winter, and spring quarters are subject to the following provisions:

- In no case may a course be added after the fifth day of classes. No course may be dropped after the drop deadline listed in the academic calendar.
- In courses designated with "Student Option" grading, undergraduate students may typically elect to change from quality grade to the pass/no credit (P/N) option or vice versa through the P/N deadline. Check the current year academic calendar for deadlines and the regulations of the individual schools for specific information on the P/N option and how courses completed P/N may be applied to academic requirements.
- To add a class, students must log on to CAESAR and add the course to their record. Consent of the department or instructor may be required. See the class schedule for specific course information.
- To drop a course, students must log on to CAESAR and drop the course from the record. In most cases no special consent is required.
- A course dropped by the drop deadline does not appear on the permanent academic record, and no grade is recorded.
- Failure to drop a course within the time allowed may result in a failure and may be recorded with a grade of F.

See also Withdrawal Refunds (p. 17) and Change of Registration and Bills (p. 17).

## Registration in the School of Professional Studies

Northwestern University School of Professional Studies, with locations in Evanston, Chicago, and the Chicago Loop, offers courses designed primarily for working adults. Students enrolled in an undergraduate school at Northwestern may take SPS courses for credit only with the approval of their school's dean or their faculty adviser. SPS students have priority, so enrollment of non-SPS undergraduate students in SPS courses is capped. Registrations are processed on the first day of the quarter, and priority is given to students who need a course to complete a major.

To register for SPS courses, students must

- Complete a Dual Registration Form.
- Secure the required approvals.

## Exams and Attendance

### Regular Examinations

Regular course examinations are held during the last week of each quarter at the times indicated in the quarterly class schedule, accessible via CAESAR and at <https://www.registrar.northwestern.edu/calendars/final-exam-schedules/index.html> (<https://www.registrar.northwestern.edu/calendars/final-exam-schedules/>). Summer Session examinations are usually held at the last class meeting. Students are responsible for knowing the time and location of each examination. Early examination policies are determined by each school. Both the instructor and the dean may permit a student to be absent from the final examination for causes beyond the student's control; normally such permission must be secured in advance of the date of the examination, and an incomplete grade is awarded. Students planning to graduate within that time frame must complete courses and receive grades before graduating. Incomplete grades remaining at the time of degree conferral will be changed to final grades of F (failure).

Please also see the policy on incomplete grades.

### Class Attendance and Absence

Undergraduate students enrolled in courses with in-person class meetings are expected to be on campus and in attendance no later than the end of the first week of the quarter and must plan to remain until the end of the quarter. Please see the related policy for more detail. (<https://www.northwestern.edu/provost/policies-procedures/classwork-curricular-policies/in-person-arrival.html>)

In addition, students are expected to attend all sessions of the courses for which they are registered. Excessive absence is cause for failure in the course. Some courses require attendance at the first class meeting. Students may be dropped for nonattendance. Such courses are designated in CAESAR as "First Class Mandatory."

## Withdrawal

### Withdrawal from the University

Students who wish to withdraw from the University after registering for classes, either for a term or permanently, must file a term withdrawal request (<https://www.registrar.northwestern.edu/forms/>) online, which will be routed automatically to the appropriate school for approval and sent to the Office of the Registrar.

If the request is submitted before the term begins (i.e. the first day of classes), registration is cancelled and removed from the student's record entirely. Cancellation of registration also cancels all applicable tuition and fees for that quarter.

If the request is submitted after the term begins but before the deadline to drop classes, that quarter's registered courses are removed from the transcript and a withdrawal notation added. Tuition is adjusted based on the schedule published on the Student Financial Services website (<https://www.northwestern.edu/sfs/payments/withdrawing-from-the-university/>).

After the drop deadline has passed, a withdrawal petition period begins during which students may request complete withdrawal from the term

or from individual courses. Approved petitions will result in W grades posting on the official and unofficial transcripts.

Withdrawals may no longer be requested after the final exam or the final assessment due date, or after 5 p.m. two Fridays before exams begin, whichever is sooner. When Thanksgiving or other university holidays conflict with this deadline, withdrawal petitions must be submitted by the last class/business day of that same week. Detailed procedures can be found at [www.registrar.northwestern.edu/registration-graduation/registration/withdrawal.html](http://www.registrar.northwestern.edu/registration-graduation/registration/withdrawal.html) (<https://www.registrar.northwestern.edu/registration-graduation/registration/withdrawal.html>).

See also Withdrawal Refunds (p. 17).

## Grades

### Grading Policies

The following grading system is used in computing the grade point average:

Grade	Grade Points
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D	1.0
F	0
X Failed to earn credit: missed final examination	0
Y Failed to earn credit: work incomplete	0

The following notations are ignored in computing the grade point average:

Grade	Notation
P	Pass with credit
N	No grade, no credit
K	In progress
S	Satisfactory: noncredit course
U	Unsatisfactory: noncredit course
W	Withdrawn by permission
NR	No grade reported by instructor

### Incomplete Coursework

#### Eligibility for Incomplete Grades

Northwestern University expects students to finish their coursework on time or remove themselves by dropping or withdrawing. When situations outside a student's control arise that prevent timely course completion, Northwestern designates two different incomplete grades, X and Y to designate what work is outstanding. X grades indicate that a student missed the final exam or did not submit the final assessment, but all

other work in the term was complete. The assignment of Y grades is governed by the policy below.

Northwestern undergraduate students may request an incomplete grade of Y only in a course in which they have substantially completed the work, including any requirements of attendance or engagement. The university minimally requires that more than 50% of the course requirements must be complete in order for the course to be "substantially completed." Students must also be passing the course based on the materials submitted thus far to be eligible for an incomplete Y grade.

This policy allows but does not compel incomplete Y grades in the above circumstances; Grading is the purview of the faculty, as governed by school policies, and they may choose to deny requests for incomplete grades in cases where this policy allows them.

Individual schools may also require approval by staff in the deans' offices in order for an incomplete grade to be assigned (see the Weinberg College incomplete approval process (<https://www.weinberg.northwestern.edu/undergraduate/courses-registration-grades/incompletes.html>)). Schools may consider a number of other factors when considering approval or denial of incomplete grades, such as the number of incompletes a student has requested and whether any are outstanding.

Students must consider the school offering the course, not their own school, to determine the process by which an incomplete grade is requested and assigned.

#### Impact of Incomplete Grades

As the tables above illustrate, both X and Y grades bear 0.00 grade points. As such, schools factor incomplete grades into enrollment, probation and dismissal decisions, and students should be sure they understand how incomplete grades affect academic standing.

#### Resolving Incomplete Coursework

The student must complete the course and the grade must be changed no later than the end of the following like term, or the incomplete will be changed to a final grade of F (failure). This University deadline to change an incomplete grade is the maximum amount of time allowed: Instructors are free to establish an earlier deadline and students are bound by that agreement.

Students planning to graduate before the standard grade change deadline (the following like term) must complete courses and receive grades before graduating. Incomplete grades remaining at the time of degree conferral will be changed to final grades of F (failure). Grade changes are not permitted after a degree has been conferred.

#### Pass/No Credit (P/N)

Many undergraduate courses are open to the P (pass) or N (no credit) option, which allows students to explore fields beyond their areas of specialization without concern about grade point average. Students may exercise the P/N option in classes designated with "Student Option" grading in CAESAR. For information about a particular school's P/N policy, see that school's chapter in this catalog.

#### Grade Reports

Quarterly grades are not mailed but are delivered online through CAESAR. Students may print a copy of their grades from CAESAR for verification purposes.

# Graduation & Degrees

## Petition to Graduate

Undergraduate students must submit a graduation petition, approved by appropriate advisers in their programs, in order to graduate. Students should begin the process one calendar year before they expect to graduate, but at the latest must submit by the deadlines published on the Office of the Registrar's website. The Office of the Registrar processes petitions for students with programs in Weinberg College, the School of Communication, the School of Education and Social Policy, the Medill School of Journalism, Media, Integrated Marketing Communications and the Bienen School of Music. McCormick School students submit petitions to the Undergraduate Engineering Office. Failure to petition in a timely fashion may delay graduation or result in omission of the student's name from the printed Commencement program.

For additional information, see <https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/index.html> (<https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/>).

## Degree Conferral

Undergraduate degrees are conferred at the end of each quarter, including summer. The official conferral date for each term is the Friday after exams end and grades are due. All programs for which a student has completed requirements are conferred simultaneously at the end of the student's career. Once the degree(s) are posted to the student's record, it is closed and no changes or further enrollment as an undergraduate are permitted.

The appropriate credential documenting degree completion and majors, minors and certificates completed is an official transcript with notation of an awarded degree. Diplomas are considered by Northwestern University to be ceremonial documents.

## Graduation Honors

### Honors and Prizes

#### Graduation with School Latin Honors

Degrees with honors are determined by grades in all work at Northwestern University and are awarded to the top 25 percent of the students in each school who complete graduation requirements. Spring quarter graduates in the highest 5 percent of the school's class are awarded degrees summa cum laude; those in the next 8 percent, magna cum laude; and those in the next 12 percent, cum laude. Graduation honors are not announced before Spring Commencement, and the GPA cutoffs for each level of honors based on the stated percentages are not made public. Students who complete degrees in the summer, fall, or winter quarter are awarded school honors based on the GPA cutoffs established by the prior spring quarter's graduating class.

#### Graduation with Departmental Honors

Departmental honors may be granted to graduating seniors who have done outstanding work in a department in connection with a research project or work of an integrative nature. Students are nominated for these honors by their departments. The faculty of the school concerned makes the final awards. See the school sections of this catalog for more information on departmental honors.

## Honorary Organizations and Prizes

Students who qualify by reason of superior scholarship or other outstanding achievement are eligible for membership in certain honorary societies. Some of these recognize outstanding performance within one of the undergraduate schools, while others recognize distinction in a specific field of study, certain extracurricular options, or other endeavors.

In addition, several prizes established through gifts and endowments are awarded each year to undergraduate students. Some are all-University prizes, and others are available only to students in the school, department, or program that administers the awards. Prizes may recognize past achievements or provide students with funding for research projects or creative activities.

## Student Status

### Classification of Students

Class	Units Completed
Senior	33+ units complete
Junior	22 - 32.99 units complete (Engineering Co-Op students are considered preseniors when they have completed 32 units and seniors when they have completed 40 units)
Sophomore	11 - 21.99 units complete
First-year student	less than 11 units complete

- Graduate student: has a bachelor's degree or equivalent and has been admitted to a graduate program
- Special student: is not working toward a degree at Northwestern but is working for credit

## Student Status for Financial Aid & Enrollment Verification

Financial Aid Status	Units
Full Time	3.00+
Half-time	2.00-2.99
Less than Half Time or Part Time	Less than 2.00

## Class Rank

Northwestern University does not rank its students.

## Inter-School Transfers

Undergraduate students who wish to transfer from one school or college of the University to another must have an inter-school transfer approved by the dean's office of the school to which they wish to transfer. A return to the original school must be approved in the same way. Approval of an inter-school transfer is usually contingent on satisfactory performance in the original school. The policy concerning inter-school transfer and application deadlines can be found at [www.registrar.northwestern.edu/forms/interschool\\_transfer.html](http://www.registrar.northwestern.edu/forms/interschool_transfer.html).

## Auditors

Auditors are persons whose engagement in a course is limited to observation and listening only; they are not permitted to enroll, participate in class discussion, submit written or oral assignments, or

take examinations. They do not receive academic credit. Auditing is not permitted for undergraduate classes.

## **Academic Standing**

The faculty of the school in which a student is enrolled determines the academic standing of that student.

Continuing enrollment should be interpreted as good academic standing.

## **Academic Probation**

Academic probation constitutes notice of unsatisfactory academic performance; it is a warning that minimum standards for graduation are not being met. Unless a student demonstrates significant scholastic improvement during the period of probation and thereby indicates ability to fulfill degree requirements within a reasonable period of time, the student may be dismissed from the University.

The following are ordinarily placed on academic probation:

- Students who have received final grades below C in 2 or more courses in any term
- Sophomores, juniors, or seniors who have a cumulative academic record below a C average on all work attempted at Northwestern University
- Students who have failed to complete at least 3 quarter-courses or the equivalent in each of 2 consecutive quarters
- Students who, on account of dropped courses, failure, or uncompleted courses, have failed to earn credit for an average of 3 quarter-courses per quarter after 6 quarters of residence
- Students who have failed to maintain a C average in the major or a professional field of study

The faculty of each school may impose such additional conditions of academic probation as they may deem appropriate.

## **Removal from Academic Probation**

Students on academic probation are ordinarily removed from probation if the deficiencies that resulted in probation have been remedied during the next succeeding quarter in residence. Students are rarely removed from probation on the basis of a program consisting of less than 4 courses graded on a basis other than the pass/no credit option.

If students on probation who receive grades of X or Y are not dismissed, probation continues until they have completed all courses or until the end of the next quarter in residence, when the students' records are again subject to scrutiny.

In no case are students removed from probation at the end of a quarter in which they have failed any course.

## **Academic Dismissal**

The following is a partial list of categories of students who may be dismissed for academic deficiencies (in every case the decision is determined in part by the student's cumulative academic record):

- Students on academic probation whose academic records have not improved significantly during the period of probation (which will not normally exceed 2 consecutive quarters)
- Students not on academic probation who fail in half the work in any quarter or Summer Session

- Students who demonstrate flagrant neglect of academic work at any time
- Students who do not make satisfactory progress toward completion of degree requirements

As a matter of general policy, the probation period for a first-year student may be extended to the third quarter of residence if such extension appears to be in the best interests of the student and the University. Such consideration is not granted to a first-year student whose record clearly discloses lack of aptitude or flagrant neglect of work.

Academic dismissals may be for a defined period of time or permanent.

All academic dismissals from the University are noted on official transcripts at the end of the relevant term regardless of the length of the dismissal.

## **Dual Degree Students**

Dual degree students are held separately to the academic standing policies of both schools. Therefore, depending on respective performance in the academic work required by each school, students may have different standing up to and including academic dismissal in one school but not the other. School officials communicate each term to ensure colleagues are informed of the standing of all students pursuing degrees in their respective schools.

## **Disciplinary Actions**

### **Disciplinary Suspension/Expulsion**

Students suspended from Northwestern by the University Hearing and Appeals System may not receive Northwestern credit for academic work pursued at any other institution during the period of suspension.

Student Conduct findings that result in expulsion from the University are noted on official transcripts at the end of the relevant term.

Expulsion is recorded on the official transcript; suspension is not.

Details about disciplinary policies and records are available through the Office of Community Standards (<https://www.northwestern.edu/communitystandards/>).

## **Returning to the University**

### **Readmission to the University**

Undergraduate students who have not registered for one or more quarters of an academic year must file an application to reenter with their school dean's office no later than six weeks before the first day of registration of the quarter in which they plan to return. Students who seek credit for course work taken at another institution must submit an official transcript to the Office of the Registrar, as well as have the transfer credit approved by relevant Northwestern departments and officials in their home schools.

Application to reenter is not required if students have registered during the spring quarter and intend to return in the fall.

If a student interrupts a program of study for an extended period of time and degree requirements are changed during this period, the new requirements normally must be met. Any modification of the requirements is made by the appropriate administrative officers of the school in which the student is registered.

# Transcripts

## Northwestern University Transcripts

Students may request an official transcript of their academic record from the Office of the Registrar. Northwestern provides transcripts either on paper or in the form of a certified PDF that may be distributed securely. A fee is charged for all official transcripts (see Fees under Tuition and Fees). Current students may print unofficial copies for their personal use from CAESAR.

Except for internal educational uses or as otherwise required by law, Northwestern issues official transcripts only upon written authorization of the student concerned. Requests for transcripts initiated by persons or agencies other than the student or appropriate educational agencies will not be filled until written authorization has been secured from the student. When these requests can be anticipated, students can avoid delay by providing such authorization in advance. Because of the confidential nature of a student's record, telephone or email requests for transcripts will not be accepted.

Former students may order an official transcript by following the instructions at [www.registrar.northwestern.edu/academic\\_records/obtaining\\_a\\_transcript.html](https://www.registrar.northwestern.edu/academic_records/obtaining_a_transcript.html). The site provides full information on the University's policies and procedures governing academic records.

## Transcripts from Other Institutions

Northwestern neither releases nor certifies copies of transcripts or other academic documents received from other schools or institutions. This includes test score reports and transcripts submitted to Northwestern for admission or evaluation of transfer or study abroad credits. Students who study abroad and subsequently need a transcript of their coursework must request it from the institutions they attended or through their study abroad programs.

## Transfer Credit

Per the Undergraduate Registration Requirement (<https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/undergraduate-registration-requirements.html>), students must complete a minimum number of Northwestern credits and quarters in order to complete a Northwestern degree. These minimums also affect the numbers of Advanced Placement (AP), transfer credit, and/or other external credit (such as International Baccalaureate) that may be applied toward the undergraduate degree. The requirement varies depending upon whether a student enters as a freshman or transfer student, and whether the degree program is a four-year program or a dual bachelor's degree program. Students should review the requirement (<https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/undergraduate-registration-requirements.html>) when attempting to transfer credit.

## Test Credit

Eligible Advanced Placement (AP) and higher-level International Baccalaureate (IB) scores may be applied to a bachelor's degree. Northwestern may also award credit for distinguished performance on certain foreign national examinations. The type and level of test credit awarded is standardized across the undergraduate schools, though each school has separate rules regarding the use of test credit to fulfill particular degree requirements. Refer to the schools' websites for details.

Students may not receive duplicate credit in one area of study. For example, a student who takes the AP and IB exams in calculus and receives eligible scores on both will be granted credit for only one set of results. Students may only earn credit for exams taken prior to matriculation at Northwestern University, or matriculation at another post-secondary institution before transferring to Northwestern.

An updated test credit policy is published annually for the incoming class. For further details see the Office of the Registrar's website: <https://www.registrar.northwestern.edu/registration-graduation/transfer-and-test-credit/advanced-placement-and-international-baccalaureate-credits.html>.

## Transfer Types

### Work at Other Institutions

Students who wish to transfer credit for work taken elsewhere during an absence from Northwestern must obtain advance approval of their proposed course of study. Procedures vary depending upon whether the study is part of a study abroad program or simply enrollment at another institution. Students should consult <https://www.registrar.northwestern.edu/registration-graduation/transfer-and-test-credit/transfer-credit-after-matriculating-at-nu.html> for policies and procedures, including the appropriate petition for credit for non-Northwestern courses. An official signed and sealed transcript documenting that work must be submitted to the Office of the Registrar in order for credit to be applied to the student's record.

Students may not register concurrently at Northwestern and at another institution and receive transfer credit for work taken at the other institution unless permission is granted in advance by the office of the dean of their schools. This applies to traditional and online or blended-format courses.

## Transfer Students

Transfer students are defined as students who have completed at least one full academic year at a postsecondary institution prior to entering Northwestern. Once admitted, the Office of the Registrar conducts an evaluation of credit earned at the student's previous institution and makes an initial determination of appropriate Northwestern credit to award. Transfer students are held to a different Undergraduate Registration Requirement (<https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/undergraduate-registration-requirements.html>) than students who enter Northwestern as first-year students; otherwise, all academic policies apply equally.

## Undergraduate Registration Requirement

The Undergraduate Registration Requirement (URR) applies to students seeking a bachelor's degree and must be completed in addition to the degree requirements established by the school faculties. Each school specifies a minimum number of units of credit needed for a bachelor's degree (42 or more, depending on the degree and school). The URR specifies the number of quarters a student must be registered at Northwestern and how much credit must be earned at Northwestern. It is predicated on the principle that when a student receives a bachelor's degree from Northwestern University, the majority of the student's academic work is completed at the University.

For the purposes of the URR, the following definitions apply:

- Being “registered at Northwestern” for a quarter means that during that quarter the student is registered for and completes Northwestern coursework worth at least 2 full units of credit under the supervision of Northwestern faculty members. Eligible coursework includes, for instance, the practicum in the School of Education and Social Policy and the Journalism Residency in the Medill School of Journalism, Media, Integrated Marketing Communications. It does not include the Walter P. Murphy Cooperative Engineering Education Program or most study abroad credits (see exception below).
- For counting number of quarters, a credit-bearing course is considered completed if a student receives any of the following grades: A, B, C (including pluses and minuses), D, F, P, N, X, Y, K, or W. Courses in which the student receives an NR are not included. The NR is an administrative notation rather than a grade.
- Only credits earned (not just attempted) count toward the minimum units of credit needed. Thus, only courses in which the student receives an A, B, C (including pluses and minuses), D, or P are included.

The provisions of the URR are as follows:

- A student entering as a first-year student in a four-year degree program must be registered at Northwestern for at least 9 quarters and earn credit for courses worth at least 32 units at the University.
- A student entering as a first-year student and completing a dual bachelor’s degree program involving two schools must be registered at Northwestern for at least 11 quarters and earn credit for courses worth at least 42 units at the University. See the Dual Bachelor’s Degrees (p. 38) section for information on approved dual bachelor’s degree programs. This provision does not apply to students completing two BS degrees within McCormick; see Options & Support (p. 146) in McCormick for the specific requirements covering this situation.
- A student entering as a transfer student in a four-year degree program must be registered at the University for at least 6 quarters and earn credit for courses worth at least 21 units at the University.
- A student entering as a transfer student and completing a dual bachelor’s degree program involving two schools must be registered at Northwestern for at least 9 quarters and earn credit for courses worth at least 32 units at the University. See the Dual Bachelor’s Degrees (p. 38) section for information on approved dual bachelor’s degree programs. This provision does not apply to students completing two BS degrees within McCormick; see Options & Support (p. 146) in McCormick for the specific requirements covering this situation.
- Students who complete at least 2 full units of study abroad credit designed as “-SA” courses in the class schedule in a given quarter are considered to be registered at Northwestern for that quarter, and this credit will count toward the minimum needed to satisfy the URR. These courses are taught by Northwestern faculty. Transfer credit for study abroad courses that are not taught by Northwestern faculty do not carry Northwestern course numbers or the SA designation will not be counted toward the URR, with the exception of HPME students as detailed below.
- HPME students, who are subject to all other URR provisions for students entering as first-year students in a four-year degree program, have the option to use 1 quarter of study abroad via a program approved by the Global Learning Office toward the 9-quarter URR requirement, if they earn the transferred equivalent of at least 2 units

of Northwestern credit. Such students may not use these credits toward the required 32 units of Northwestern credit.

- ISP students in Weinberg College are subject to the following special URR provisions:
  - Students must register for at least 6 quarters and complete at least 23 units of credit at Northwestern.
  - The remainder of the 38.7 minimum units required of ISP students may be a combination of test and approved transfer (including study abroad) credit.

## Petition for a Undergraduate Registration Requirements Waiver

The Undergraduate Registration Requirement (URR) is established to ensure that a Northwestern degree reflects the scope and depth of learning and the values embodied by a Northwestern education. The Undergraduate Registration Requirement is described in the Undergraduate Catalog and noted in the CAESAR Degree Progress Report (DPR) and MAS. Students have on-demand access to their standing with this requirement throughout their career and are expected to pay attention to the Undergraduate Registration Requirement in addition to their school/major requirements. When students are not on track to meet the URR by their final term, they are notified by the Registrar Degree Audit team via email. Students should consult with their school academic adviser on their academic progress before submitting a petition. Only in extremely rare circumstances will a petition be granted for an exception to this University Policy.

## Petition Criteria for Consideration of an Undergraduate Registration Requirements Waiver

- Students must be within two quarters of graduating.
- Petitions for consideration of an exception to the Undergraduate Registration Requirement may only address the number of credits; exceptions would only be considered for the purposes of reducing the number of quarters a student must complete in cases of University error.

## Procedure to Submit a Petition for an Undergraduate Registration Requirement Waiver

Students who wish to submit a petition for an Undergraduate Registration Requirement Waiver must meet the criteria above. See Undergraduate Advising for instructions to submit a petition for an Undergraduate Registration Requirement Waiver (<https://www.northwestern.edu/undergraduate-advising/for-students/navigating-university-rules-requirements/petitions-for-enrollment-exception/undergraduate-registration-requirement-waiver-instructions.html>).

# ADDITIONAL BACCALAUREATE OPTIONS

Undergraduate degree requirements are established by the faculties of each school. While the requirements consequently differ significantly by school, all students must pursue at least one major (their degree major) in their home school to earn a Northwestern undergraduate degree.

Students often also elect to pursue additional majors (p. 35), minors (p. 33), certificates (p. 29), and other special programs in schools other than their own, in addition to those from their home school. A program like this results in a single undergraduate degree with multiple majors.

Students may also apply and be admitted to multiple schools that offer pre-approved dual degrees (p. 38). A program like this results in two different undergraduate degrees conferred by the two different schools and often requires an additional year of study.

## Accelerated Bachelors Integrated Science Program

The Integrated Science Program (ISP) (p. 345) is a highly selective undergraduate program of integrated science studies within Weinberg College. The curriculum provides a thorough and rigorous background in the major scientific disciplines and mathematics and offers special research opportunities. ISP can lead to a bachelor of arts degree from Weinberg College in three years or, after a fourth year at Northwestern, to a double major or an advanced degree. Students from the McCormick School of Engineering and Applied Sciences who have been admitted to ISP may complete Integrated Science as an additional major, but it does not accelerate completion of the bachelor of science degree. For information on applying to ISP, see Special Admission Programs (p. 12). For a description of the program, see the Integrated Science (p. 345) section of this catalog and [isp.northwestern.edu](http://isp.northwestern.edu).

## Certificates

Smaller in scope than majors or minors, certificates usually are offered in areas of concentration for which no major or minor exists and are comprised of at least 4 units of coursework uniquely counted, not also applied to any other academic plan or credential. Such coursework may fulfill other degree requirements such as distribution or required electives. Certificates are conferred concurrent with the student's undergraduate degree. They do not appear on the diploma, but are noted on the transcript.

Most undergraduate schools and the Kellogg School of Management offer certificates for undergraduate students. See the list of offerings on the left in the web navigation and in subsequent pages in the PDF.

## Kellogg Certificates

[kellogg.northwestern.edu/certificate](http://kellogg.northwestern.edu/certificate)

### Overview

The Kellogg School of Management administers a program leading to an undergraduate certificate in either Financial Economics or Managerial Analytics. Each certificate requires completion of four courses taught at an advanced level by Kellogg faculty members. Building on students'

existing analytical skills, the certificate curriculum serves as excellent preparation for careers in consulting, financial services, and other data-driven professions and/or for doctoral or professional school programs.

Certificate students also benefit from one-on-one counseling from a dedicated career development specialist to help them secure summer internships and full-time employment.

## Application and Program Requirements

About 100 students each year are accepted into the certificate program through a competitive application process. Any Northwestern undergraduate who meets the program's rigorous selection criteria may apply. Program prerequisites include advanced calculus and microeconomics. Additional program corequisites include intermediate probability & statistics and advanced econometrics & statistics.

### Certificate Prerequisites

The program prerequisites should be completed prior to applying to the program. One prerequisite course may be taken during the Winter Quarter of the year you apply. All other program prerequisites should be completed no later than the fall of the year you apply.

Course	Title
<b>Calculus Prerequisite</b>	
<i>Option 1: Regular Math</i>	
MATH 230-1	Multivariable Differential Calculus
MATH 230-2	Multivariable Integral Calculus
<i>Option 2: MENU</i>	
MATH 290-2	MENU: Linear Algebra and Multivariable Calculus
MATH 290-3	MENU: Linear Algebra and Multivariable Calculus
<i>Option 3: MENU Accelerated</i>	
MATH 291-2	MENU: Intensive Linear Algebra and Multivariable Calculus
MATH 291-3	MENU: Intensive Linear Algebra and Multivariable Calculus
<i>Option 4: ISP</i>	
MATH 281-1	Accelerated Mathematics for ISP. First Year
MATH 281-2	Accelerated Mathematics for ISP. First Year
<i>Option 5: MMSS</i>	
MATH 285-2	Accelerated Mathematics for MMSS
MATH 285-3	Accelerated Mathematics for MMSS
<i>Option 6: McCormick</i>	
MATH 228-1	Multivariable Differential Calculus for Engineering
MATH 228-2	Multivariable Integral Calculus for Engineering
<i>Option 7: McCormick Honors</i>	
ES_APPM 252-1	Honors Calculus for Engineers
ES_APPM 252-2	Honors Calculus for Engineers
<i>Option 8: Data Science Major</i>	
STAT 228-0	Series and Multiple Integrals *
*Must also take MATH 230-1	
<i>Option 9: Alternative Math Option</i>	
MATH 235-0	Series and Multiple Integrals
*Must also take MATH 230-1 or equivalent	
<b>Microeconomics Prerequisite</b>	
Complete one of the following courses:	
<i>Option 1</i>	
ECON 310-1	Microeconomics *
<i>Option 2: MMSS</i>	

MMSS 211-1 Social Science Theories & Meth-First Yr

\*Please note that ECON 201-0 and ECON 202-0 are prerequisites

### Certificate Corequisites

Program corequisites must be completed within a year of entering the program. Please note that program corequisites may be prerequisites for individual certificate courses. Take this into account when planning your course schedule.

Course	Title
<b>Probability Corequisite</b>	
<i>Option 1</i>	
MATH 314-0	Probability and Statistics for Econometrics *
<i>Option 2</i>	
MATH 310-1	Probability and Stochastic Processes *
<i>Option 3: MMSS</i>	
MATH 311-1	MENU: Probability and Stochastic Processes *
<i>Option 4</i>	
STAT 320-1	Statistical Theory & Methods 1 *
<i>Option 5: ISP</i>	
STAT 383-0	Probability and Statistics for ISP
<i>Option 6: MMSS</i>	
MATH 385-0	Probability and Statistics for MMSS
<i>Option 7: McCormick</i>	
IEMS 302-0	Probability
<i>Option 8: McCormick</i>	
ELEC_ENG 302-0	Probabilistic Systems
<i>Option 9: McCormick</i>	
BMD_ENG 220-0	Introduction to Biomedical Statistics
<i>Option 10: McCormick</i>	
CHEM_ENG 312-0	Probability and Statistics for Chemical Engineering
*MATH 226-0 is a prerequisite or corequisite for these courses. Review prerequisites when planning your schedule	
<b>Econometrics/Statistics Corequisite</b>	
<i>Option 1</i>	
ECON 381-1	Econometrics
<i>Option 2: MMSS</i>	
MATH 386-1	Econometrics for MMSS
<i>Option 3: McCormick</i>	
IEMS 303-0	Statistics
IEMS 304-0	Statistical Learning for Data Analysis
<i>Option 4</i>	
STAT 320-2 or STAT 383-0	Statistical Theory & Methods 2 Probability and Statistics for ISP
STAT 350-0	Regression Analysis
<i>Option 4: Data Science Major or Minor with R**</i>	
STAT 301-1	Data Science 1 with R
STAT 301-2	Data Science 2 with R
STAT 301-3	Data Science 3 with R
<i>Option 5: Data Science Major or Minor with Python**</i>	
STAT 303-1	Data Science 1 with Python
STAT 303-2	Data Science 2 with Python
STAT 303-3	Data Science 3 with Python
**Students should not plan to take these courses unless they have been admitted to the major or minor	

See [kellogg.northwestern.edu/certificate](http://kellogg.northwestern.edu/certificate) for a complete explanation of the program prerequisites and corequisites.

## Financial Economics Certificate

To earn the Financial Economics Certificate, students admitted to the Kellogg Certificate Program for Undergraduates must complete KELLG\_FE 310-0 Principles of Finance and three additional KELLG\_FE courses, for a total of 4 financial economics certificate courses. Excluding KELLG\_FE 310-0 Principles of Finance, one KELLG\_FE course is taught each quarter (Fall, Winter, Spring). Each KELLG\_FE course is taught once per year.

The Financial Economics curriculum comprises the following four courses:

Course	Title
KELLG_FE 310-0	Principles of Finance (must be completed in Spring Quarter of the year admitted)
KELLG_FE 312-0	Investments
KELLG_FE 314-0	Derivatives
KELLG_FE 316-0	Topics in Financial Economics

**KELLG\_FE 310-0 Principles of Finance (1 Unit)** Foundation course for the certificate. Basic principles of finance, focusing on the effects of time and uncertainty on value. First half emphasizes valuation, including discounted cash flows, equity and debt valuation, the term structure of interest rates, portfolio theory, asset pricing, and efficient market theory. Second half examines firms' financing decisions, including capital budgeting, capital structure, and payout policy.

**KELLG\_FE 312-0 Investments (1 Unit)** Active portfolio strategies in bonds and stocks, optimal portfolio selection from the perspective of individual and institutional investors, and the role of style and performance benchmarks in portfolio management. Performance evaluation, trading costs, and other special topics.

**KELLG\_FE 314-0 Derivatives (1 Unit)** Use and pricing of forwards and futures, swaps, and options. Strategies for speculation and risk management, no-arbitrage pricing for forward contracts, binomial and Black-Scholes option pricing models, applications of pricing models in other contexts.

**KELLG\_FE 316-0 Topics in Financial Economics (1 Unit)** In-depth examination of selected issues in finance.

## Managerial Analytics Certificate

To earn the Managerial Analytics Certificate, students admitted to the Kellogg Certificate Program for Undergraduates must complete KELLG\_FE 310-0 Principles of Finance and three KELLG\_MA courses, for a total of four managerial analytics certificate courses. One KELLG\_MA course is taught each quarter (Fall, Winter, and Spring).

In addition to the four certificate courses, students must also complete the prerequisites and corequisites.

Course	Title
KELLG_FE 310-0	Principles of Finance (must be completed in Spring Quarter of the year admitted)
KELLG_MA 324-0	Operations and Supply Chain Management
KELLG_MA 326-0	Topics in Managerial Analytics
KELLG_MA 328-0	Competitive Strategy and Industrial Structure

**KELLG\_MA 320-0 Analytical Decision Modeling (1 Unit)**

**KELLG\_MA 322-0 Pricing (1 Unit)** Comparison of the three main ways to set prices-haggling/negotiation, posted price, and auctions. How to

choose the best method in a given situation. Customizing the price of the same product or service to different segments, using optimization models to set prices when volume is uncertain, pricing multiple products. Introduction to techniques for gathering information about buyer valuations and demands, including regression, conjoint analysis, and enterprise value creation.

#### **KELLG\_MA 324-0 Operations and Supply Chain Management (1 Unit)**

Management of business processes-i.e., a firm's recurring activities. Challenges facing operations managers; the language, concepts, insights and tools needed to gain competitive advantage through operations and supply chains; different strategies for different processes and supply chain structures, and the operational capabilities allowing and supporting them.

**KELLG\_MA 326-0 Topics in Managerial Analytics (1 Unit)** In-depth examination of selected issues in managerial analytics; topic varies each year.

#### **KELLG\_MA 328-0 Competitive Strategy and Industrial Structure (1 Unit)**

The course studies the determinants nature of competitive strategy in a variety of industry structures.

## **McCormick Certificates**

### **In the McCormick School of Engineering and Applied Science**

All certificates in the McCormick School of Engineering are open to students from other Schools. These include the following:

- Curious Life (p. 176)
- Human Computer Interaction (p. 190)
- Segal Design (p. 207)

Information on these options, including course requirements and application instructions, can be found in Academic Options (p. 146) of the McCormick school section.

## **Medill Certificates**

### **In the Medill School of Journalism, Media, Integrated Marketing Communications**

Medill offers a Certificate in Integrated Marketing Communications (p. 211) open to undergraduates throughout Northwestern and includes prerequisite courses from the other undergraduate schools. Details on prerequisites and requirements can be found in the Medill School (p. 208) section of this catalog.

## **Programs & Centers Certificates**

- Leadership (p. 31)
- Sustainability and Energy (p. 32)

## **Leadership**

[lead.northwestern.edu](http://lead.northwestern.edu)

Northwestern's Center for Leadership offers the Undergraduate Leadership Program (ULP), a certificate program open to all Northwestern undergraduates. The inter-school program helps students understand the nature of leadership and prepares them to become leaders on campus,

in the community, and in their professions. ULP participants explore key leadership themes and issues, build and refine a personal leadership model, and develop foundational leadership assets.

## **Certificate Steps and Requirements**

To earn the Undergraduate Leadership Certificate, students are required to complete the following three courses in the following order:

#### *1: Paradigms & Strategies of Leadership (LDRSHP 204-0)*

The Paradigms & Strategies of Leadership course is offered each Fall and Spring.

#### *2: Leading from Design (LDRSHP 304-0)*

The Leading from Design course is offered each Fall and Winter.

#### *3: Field Study in Leadership LDRSHP 396-0*

The Field Study in Leadership course is offered every quarter.

As stated above, LDRSHP 204-0 Paradigms and Strategies of Leadership is a prerequisite for LDRSHP 304-0 Leading From Design. LDRSHP 204-0 Paradigms and Strategies of Leadership and LDRSHP 304-0 Leading From Design are prerequisites for LDRSHP 396-0 Field Studies in Leadership. The classes must be taken in this order, but students are not required to take them in consecutive quarters.

**LDRSHP 204-0 Paradigms and Strategies of Leadership (1 Unit)** ULP students' introduction to essential leadership capacities such as mobilizing others, teaming and resilience. Components include weekly lectures, small group discussions and small group assignments.

**LDRSHP 304-0 Leading From Design (1 Unit)** Through readings, small group discussion, self-assessment and reflecting on leadership and other life experiences, this course builds on the themes, models and concepts introduced in **LDRSHP 204-0** (Paradigms and Strategies of Leadership), to help students develop a deeper self-awareness that serves as the foundation for the construction of their own individual leadership model.

**LDRSHP 395-0 Special Topics in Leadership (0-1 Unit)** Topics suggested by students or faculty members and approved by the department.

**LDRSHP 396-0 Field Studies in Leadership (2 Units)** The Field Study in Leadership is built around a practical leadership experience the student attains or creates. The student must receive instructor approval beforehand. The minimum requirements for a field study experience to be approved are as follows: 1) The endeavor must be one where the student doing the field study is mobilizing and collaborating with a group of at least 3 people (other than the student themselves) to accomplish a common purpose, goal, or objective. 2) The student must spend at least 160 hours leading the endeavor. Through readings, written assignments, and small group discussion the course helps students process their experience and better understand the perspective of those they hope to lead.

**LDRSHP 399-0 Leadership Independent Study (1 Unit)** Independent study on a Leadership subject supervised by a faculty member and concluding with a final report or project.

# Sustainability and Energy

[trienens-institute.northwestern.edu](https://trienens-institute.northwestern.edu) (<https://trienens-institute.northwestern.edu>)

The Paula M. Trienens Institute for Sustainability and Energy (formerly ISEN (<https://trienens-institute.northwestern.edu/25-million-grant-to-northwestern-will-accelerate-global-sustainability-and-energy-innovation/>)) advances global energy and sustainability solutions through transformational research, interdisciplinary education, and public engagement. The Trienens Institute is the enterprise-wide sustainability and energy Institute supporting on-campus research at the undergraduate, graduate, and faculty levels across physical and social sciences, engineering, law, policy, business, and communications. It also sponsors a variety of stakeholder engagement programs, both on and off campus, in collaboration with student groups, academic and governmental partners, and private industry.

The Institute offers curriculum at the undergraduate and graduate levels, including an **undergraduate certificate** in sustainability and energy. The Certificate provides a means for any Northwestern undergraduate student to pursue interdisciplinary instruction in the increasingly important areas of climate, sustainability, and energy during their undergraduate coursework, while signaling broad topic proficiency to potential future employers. See more at [trienens-institute.northwestern.edu/sustainability-and-energy-certificate](https://trienens-institute.northwestern.edu/sustainability-and-energy-certificate).

The Trienens Institute also offers a **professional Master of Science in Energy and Sustainability (MSES)**, in collaboration with the McCormick School of Engineering. The Master's program prepares graduate students for public and private sector leadership careers in energy and sustainability. The one-year degree combines a comprehensive, interdisciplinary core curriculum (<https://www.northwestern.edu/mses/curriculum/course-listings.html>) spanning technology, markets, and public policy with a student-selected elective specialization track, allowing content personalization while maintaining an overall cohort experience. MSES also provides critical professional training while limiting time out of the workforce, and facilitates student experience with industry partners and practitioners. At this time, there is no formal option for a combined BA/BS-MS; graduating students would need to apply directly to the program. See more at [northwestern.edu/mses](https://northwestern.edu/mses) (<https://www.northwestern.edu/mses/>).

Finally, in partnership with Northwestern's Study Abroad Office, Office of International Program Development, and Northwestern Engineering Office for Global Initiatives, the Trienens Institute offers non-credit summer programs in Germany (sustainability and energy), Israel (water resource management), Chile (energy storage and critical minerals), and Taiwan (innovation and hi-tech). See more at <https://trienens-institute.northwestern.edu/study-abroad>.

## Certificate Requirements (7 units)

Course	Title
ISEN 210-0	Introduction to Sustainability: Challenges and Solutions
ISEN 220-0	Introduction to Energy Systems for the 21st Century
ISEN 230-0	Climate Change and Sustainability: Ethical Dimensions

- 4 electives
  - Chosen from pre-approved curricula—including study abroad options—in the natural and social sciences, engineering,

and other disciplines. An eligible electives list (along with registration forms and FAQs) is at <https://trienens-institute.northwestern.edu/education/undergraduate-certificate/>.

- Can draw no more than 2 elective courses from a single department/program.
- At least 3 must be 300 level or higher.
- 3.0 GPA requirement.
- Up to 3 of the 7 total courses may be double-counted toward all other academic plans (major, minor, other certificates; including distribution requirements, unrestricted electives, etc).

### ISEN 210-0 Introduction to Sustainability: Challenges and Solutions (1 Unit)

**Introduction to Sustainability: Challenges and Solutions (1 Unit)** Introduction to using lifecycle systems perspectives in forming evaluations and basic quantitative understandings of the challenges and potential solutions that exist for sustainable societies; framing these in the context of resource use, energy consumption and development, and environmental constraints. REQUIRED COURSE FOR ISEN CERTIFICATE. *Social Behavioral Sciences Distro Area*

### ISEN 220-0 Introduction to Energy Systems for the 21st Century (1 Unit)

**Introduction to Energy Systems for the 21st Century (1 Unit)** Overview of energy issues in the context of global sustainability: energy demands for industrial, transportation, housing, and commercial uses, strategies for demand reduction, traditional versus renewable energy systems. REQUIRED COURSE FOR ISEN CERTIFICATE. *Natural Sciences Distro Area*

### ISEN 230-0 Climate Change and Sustainability: Ethical Dimensions (1 Unit)

**Climate Change and Sustainability: Ethical Dimensions (1 Unit)** Interdisciplinary analysis of ethical issues concerning climate change; resource use, conservation practices, and sustainability. ISEN 230-0 is taught with PHIL 275-0; students may not earn credit for both courses. REQUIRED COURSE FOR ISEN CERTIFICATE. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**ISEN 375-0 Issues in Environmental Philosophy (1 Unit)** Interdisciplinary analysis of a contemporary issue, individual philosopher, or school of thought in environmental philosophy. PHIL 375-0 taught also as ISEN 375-0. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**ISEN 390-0 Special Topics in Energy and Sustainability (1 Unit)** Focused exploration of specific topical themes, trends, and challenges in applied energy and sustainability. Content varies each year; previously offered topics include geographic information systems and the impact of energy systems on the geographic distribution, wellbeing, and social organization of societies. May be repeated for credit with change in topic; some topics may be cross-listed with other departments.

**ISEN 399-0 Independent Study (1 Unit)** Independent study under direction of faculty member. Consent of department required.

## SESP Certificates

### In the School of Education and Social Policy

Northwestern undergraduates regardless of school may participate in the School of Education and Social Policy's Civic Engagement Certificate (p. 143). For more information on this program, see the School of Education and Social Policy (p. 109) chapter of this catalog or the Civic Engagement Certificate website (<https://sesp.northwestern.edu/undergraduate/options-concentrations/civic-engagement-certificate/>).

Additionally, Weinberg College students may pursue secondary teaching certification in a variety of subject areas through the School of Education and Social Policy's teacher preparation program.

## Teaching Certification

The School of Education and Social Policy offers its students and students in Weinberg College the option to complete the requirements of the Teacher Preparation and Certification program (p. 130) to qualify for Illinois state certification.

## SoC Certificates

### In the School of Communication

The Department of Theatre administers the Music Theatre Certificate (p. 104) program. Only second-year students enrolled as theatre, dance, or performance studies majors in the School of Communication or as voice majors in the Bienen School of Music are eligible to interview for the Music Theatre Certificate Program, and students must continue in one of those majors to remain eligible.

The School of Communication collaborates with the McCormick School of Engineering to offer the Human Computer Interaction (HCI) Certificate (p. 190).

## Minors

Minors are smaller in scope than majors and offer an opportunity to become familiar with areas of study outside one's degree major. They do not appear on the diploma, but are noted on the transcript.

Most undergraduate schools offer minors for undergraduate students outside their own school. See the list of offerings on the left in the web navigation and in subsequent pages in the PDF.

## Bienen Minors

### In the Bienen School of Music

The minors below are open to students outside the Bienen School:

- General music (p. 61)
- Music cognition (p. 63)
- Music composition (p. 55)
- Music technology (p. 55)
- Musicology (p. 66)

Information on these options, including course requirements and application instructions, can be found in the Bienen School (p. 50) section of this catalog.

## Programs & Centers Minors

### Transportation and Logistics

<https://www.transportation.northwestern.edu/>

The interschool Transportation and Logistics Program offers a minor (p. 33) that is available to all undergraduates.

Passenger and freight transportation represents nearly a fifth of the US gross domestic product and influences every aspect of our lives: where we live, where we work, and the goods we can purchase. The

study of transportation and logistics is inherently interdisciplinary, reaching across disciplines, schools, and departments. Northwestern offers relevant courses through the Departments of Civil Engineering and Industrial Engineering and Management Sciences in the McCormick School and the Department of Economics and other social science departments in Weinberg College. This minor (p. 33) offers undergraduates the opportunity to obtain a more rounded education in transportation and logistics than that offered within their selected majors. The curriculum equips students with a broad understanding of the economics, engineering, and operations of transportation and logistics systems and the role of public policy.

The minor (p. 33) is administered by the Transportation Center, an interdisciplinary research center founded in 1954. The center's affiliated faculty are drawn from many of the participating departments. Additional information about the program is available from the Transportation Center.

## Transportation and Logistics Minor

Students are required to complete 7 courses, of which 1 is a required course. The other 6 courses must include at least 3 core courses. At least 2 of the 6 must be outside the school in which the student is majoring. No more than one course at the 200 level.

Students in the McCormick School may double-count a maximum of 2 courses from their major program toward the minor. Students from other schools are not allowed to double-count courses that are part of their major but may count courses that fulfill related course, distribution, foundation, or social science and humanities requirements.

## Prerequisites

In preparation for pursuing the minor, students should take courses in calculus and in probability and statistics.

## Minor Requirements (7 units)

- TRANS 310-0 Seminar in Transportation and Logistics (For WCAS students entering after Spring 2023, this class fulfills the WCAS Advanced Expression requirement.)

- 3 or more core courses

- Chosen from the following:

Course	Title
CIV_ENV 304-0	Civil and Environmental Engineering Systems Analysis
CIV_ENV 371-0	Introduction to Transportation Planning and Analysis
CIV_ENV 376-0	Transportation System Operations
CIV_ENV 377-0	Choice Modelling in Engineering
ECON 310-1	Microeconomics
ECON 355-0	Transportation Economics and Public Policy
IEMS 310-0 or IEMS 313-0	Operations Research Foundations of Optimization
IEMS 381-0	Supply Chain Modeling and Analysis
IEMS 383-0	Service Engineering and Management

- 2 must be outside the student's major program.

- No substitutions are allowed.

- 3 additional courses selected from core courses or approved electives:

- Approved electives include the following:

Course	Title
ANTHRO 373-0	Power and Culture in American Cities
ANTHRO 383-0	Environmental Anthropology
BUS_INST 331-0	Real Estate Finance & Investment
CIV_ENV 205-0 or BUS_INST 304-0 or ECON 360-1 or KELLG_FE 310-0	Economics and Finance for Engineers Corporate Finance Foundations of Corporate Finance Theory Principles of Finance
CIV_ENV 330-0	Engineering Project Management
CIV_ENV 368-0	Sustainability: The City
CIV_ENV 387-0	Design of Sustainable Urban Developments
EARTH 342-0	Contemporary Energy and Climate Change
ECON 309-0	Public Finance
ECON 337-0	Economics of State and Local Governments
ECON 349-0	Industrial Economics
ECON 350-0	Monopoly Competition & Public Policy
ECON 354-0	Issues in Urban and Regional Economics
ECON 361-0	International Trade
ECON 371-0	Economics of Energy
ECON 372-0	Environmental Economics
ECON 373-0	Natural Resource Economics
ECON 381-1	Econometrics
ECON 381-2	Econometrics
ENVR_SCI 390-0	Special Topics in Environmental Sciences Geographic Information Systems Level I or equivalent course
HISTORY 309-0	American Environmental History
HISTORY 322-2	Development of the Modern American City: 1880-Present
HISTORY 376-0	Global Environments and World History
HISTORY 382-0	The Modern Japanese City
IEMS 315-0	Stochastic Models
IEMS 317-0	Discrete Event Systems Simulation
IEMS 365-0	Analytics for Social Good
IEMS 382-0	Operations Engineering and Management
ISEN 220-0	Introduction to Energy Systems for the 21st Century
POLI_SCI 321-0	Urban Politics
POLL_SCI 329-0	U.S. Environmental Politics
SOCIAL 207-0	Cities in Society
SOCIAL 301-0	The City: Urbanization and Urbanism
SOCIAL 336-0	The Climate Crisis, Policies, and Society
1 unit of approved independent study	
Graduate Level Courses	
CIV_ENV 471-1	Transportation Systems Analysis 1
CIV_ENV 471-2	Transportation Systems Analysis 2
CIV_ENV 472-1	Transportation System Operations and Control 1: Urban Networks
CIV_ENV 472-2	Transportation System Operations and Control 2: Scheduled Modes and Real-Time
CIV_ENV 480-1	Travel Demand Analysis & Forecasting 1
CIV_ENV 480-2	Advances in Travel Demand Analysis and Forecasting
CIV_ENV 482-0	Evaluation and Decision Making for Infrastructure Systems
CIV_ENV 483-0	Infrastructure Systems Analysis
CIV_ENV 484-0	Advanced Theories of Traffic Flow

IEMS 481-0	Logistics
IEMS 482-0	Operations

- At least 2 of the core or elective courses must be outside the school in which the student is registered.
- Students in the McCormick School may double-count a maximum of 2 courses from their major program toward the minor. For Industrial Engineering Majors entering in Fall 2022 or later, CIV\_ENV 205-0 Economics and Finance for Engineers is required for the Major and is subject to the maximum of two courses that can be double counted between their Major and the Transportation and Logistics Minor.
- Students from other schools are not allowed to double-count courses that are part of their major but may count courses that fulfill related course, distribution, foundational or social science and humanities requirements.
- 4XX level courses require consent of the instructor and the Director of the Transportation and Logistics Program.

**TRANS 310-0 Seminar in Transportation and Logistics (1 Unit)** Yearlong senior seminar on the structure of the transportation and supply-chain industries and evaluation of relevant public policy. Students receive 1 credit in the spring quarter of their senior year. *Advanced Expression*

**TRANS 399-0 Independent Study (1 Unit)** Advanced work chosen by mutual agreement with a faculty member. Only 1 unit may count toward the minor. Consent of faculty required.

## SoC Minors

### In the School of Communication

The School of Communication offers several programs open to students from other schools. These include the following:

- Dance minor (p. 103)
- Film and media studies minor (p. 93)
- Game design + media arts + animation (p. 94)
- Human communication sciences minor (p. 80)
- Performance studies minor (p. 90)
- Sound design minor (p. 95)
- Theatre minor (p. 107)

In addition to the above minors, the School of Communication offers a number of modules that pair coursework with co-curricular experiences, and culminate in a capstone project. See the Options and Support tab in the School of Communication (p. 73) section of this catalog and the School of Communication's Module (<https://advising.soc.northwestern.edu/undergraduate-programs/soc-academic-modules/>) webpage for more information.

## McCormick Minors

### In the McCormick School of Engineering and Applied Science

All minors in the McCormick School of Engineering are open to students from Northwestern's other undergraduate schools. These include the following:

- Architectural Engineering and Design (p. 166)
- Artificial Intelligence (p. 148)

- Biotechnology and Biochemical Engineering (p. 156)
- Computer Science (p. 175)
- Entrepreneurship (p. 186)
- Environmental Engineering (p. 166)
- Machine Learning and Data Science (p. 176)

Information on these options, including course requirements and application instructions, can be found in Academic Options (p. 146) of the McCormick school section.

## WCAS Minors

### In Weinberg College of Arts and Sciences

Weinberg College minors are generally open to students from Northwestern's other undergraduate schools. These include traditional fields of study in the social sciences, the humanities, mathematics, and the natural sciences, as well as many interdisciplinary minors. Undergraduate students from throughout Northwestern may also participate in the Chicago Field Studies programs (p. 267) housed within Weinberg College.

For more information on all these options, see the Judd A. and Marjorie Weinberg College of Arts and Sciences (p. 216) chapter of this catalog.

#### The following academic units offer Weinberg College minors:

- African Studies (p. 227)
- Anthropology (p. 229)
- Art History (p. 236)
- Art Theory and Practice (p. 240)
- Asian American Studies (p. 240)
- Asian Languages and Cultures (p. 242) (minors in Asian Humanities or Advanced Asian Languages)
- Black Studies (p. 255)
- Business Institutions (p. 259)
- Chemistry (p. 260)
- Classics (p. 268) (minors in Latin, Greek, or Classical Studies)
- Cognitive Science (p. 272)
- Comparative Literary Studies (p. 274) (minor in World Literature)
- Computer Science (p. 277)
- Critical Theory (p. 281)
- Earth and Planetary Sciences (p. 282)
- Economics (p. 286)
- English (p. 292) (minors in English or Creative Writing)
- Environmental Policy and Culture (p. 299)
- French and Italian (p. 306) (minors in French or Italian)
- Gender and Sexuality Studies (p. 314)
- German (p. 318) (minors in German, German Studies, or Business German)
- Global Health Studies (p. 324)
- History (p. 330)
- Humanities (p. 342)
- International Studies (p. 346)
- Jewish Studies (p. 348) (minors in Jewish Studies or Hebrew Studies)
- Latina and Latino Studies (p. 352)

- Latin American and Caribbean Studies (p. 351)
- Legal Studies (p. 354)
- Linguistics (p. 356)
- Materials Science (p. 360)
- Mathematics (p. 362)
- Middle East and North African Languages (p. 373) (minor in Arabic)
- Middle East and North African Studies (p. 376)
- Native American and Indigenous Studies (p. 378)
- Philosophy (p. 388)
- Physics and Astronomy (p. 393) (minor in Physics)
- Political Science (p. 399)
- Psychology (p. 408)
- Religious Studies (p. 412) (minors in Religious Studies or Catholic Studies)
- Science in Human Culture (p. 416)
- Slavic Languages and Literatures (p. 418) (minor in Russian and East European Studies)
- Sociology (p. 423)
- Spanish and Portuguese (p. 430) (minors in Spanish or Portuguese Language and Lusophone Cultures)
- Statistics (p. 438) (minors in Statistics or Data Science)

## Second Majors

In addition to their primary (degree) majors, students may pursue additional or "second" majors. The Weinberg College of Arts and Sciences and the Bienen School of Music offer their majors as primary or second majors, open to any student; other schools' majors are only available as primary majors, meaning they can only be earned by students in their home school. The completion of a second (or third) major, whether it is offered by a student's home school or another school, results in a single undergraduate degree conferred by the home school with additional majors noted on the transcript.

Dual undergraduate degree programs, which result in two different degrees, most often conferred by different schools, can be found in the Dual Bachelor's Degrees (p. 38) section.

## Bienen Second Majors

### In the Bienen School of Music

Any undergraduate student may undertake a second major from the Bienen School with successful completion of the application and audition process.

Information on these options, including course requirements and application instructions, can be found at the Bienen School (p. 50) section of this catalog.

## WCAS Second Majors

### In the Weinberg College of Arts and Sciences

Weinberg College majors are generally open to students from Northwestern's other undergraduate schools. These include traditional fields of study in the social sciences, the humanities, mathematics, and the natural sciences, as well as many interdisciplinary majors. Adjunct

majors must be completed with another major that is *not* an adjunct major; they are always a "second major" along with a primary major in the College or another of the undergraduate schools at Northwestern. Certain majors have special admissions requirements. Students from throughout Northwestern may also participate in the Chicago Field Studies programs (p. 267) housed within Weinberg College.

For more information on all these options, see the Judd A. and Marjorie Weinberg College of Arts and Sciences (p. 216) chapter of this catalog.

- Science in Human Culture (p. 416) (adjunct major)
- Slavic Languages and Literatures (p. 418) (Russian Language, Literature, and Culture or Russian and East European Studies)
- Sociology (p. 423)
- Spanish and Portuguese (p. 430) (major in Spanish)
- Statistics and Data Science (p. 438) (majors in Statistics or Data Science)

## **The following academic units offer majors in Weinberg College:**

- African Studies (p. 227) (adjunct major)
- American Studies (p. 229) (special admission requirements)
- Anthropology (p. 229)
- Art History (p. 236)
- Art Theory and Practice (p. 239)
- Asian American Studies (p. 240)
- Asian Languages and Cultures (p. 242)
- Biological Sciences (p. 249)
- Black Studies (p. 255)
- Chemistry (p. 260)
- Classics (p. 268)
- Cognitive Science (p. 272)
- Comparative Literary Studies (p. 274)
- Computer Science (p. 277)
- Earth and Planetary Science (p. 282)
- Economics (p. 286)
- English (p. 292) (major in English; special admission requirements for major in Creative Writing)
- Environmental Policy and Culture (p. 299) (adjunct major)
- Environmental Sciences (p. 302)
- French and Italian (p. 306) (majors in French or Italian Literature and Culture)
- Gender and Sexuality Studies (p. 314)
- German (p. 318)
- Global Health Studies (p. 324) (adjunct major)
- History (p. 330)
- Integrated Science (p. 345) (special admission requirements)
- International Studies (p. 346) (adjunct major)
- Jewish Studies (p. 348)
- Latina and Latino Studies (p. 352)
- Legal Studies (p. 354) (special admission requirements)
- Linguistics (p. 356)
- Mathematical Methods in the Social Sciences (p. 360) (adjunct major; special admission requirements)
- Mathematics (p. 362)
- Middle East and North African Studies (p. 376)
- Neurobiology (p. 378) (major in Neuroscience)
- Philosophy (p. 388)
- Physics and Astronomy (p. 393)
- Political Science (p. 399)
- Psychology (p. 408)
- Religious Studies (p. 412)

# DUAL GRADUATE & UNDERGRADUATE DEGREES

## Accelerated Master's Programs

Accelerated master's programs enable exceptional, advanced undergraduates to apply for admission early and meet requirements for the master's degree in an expedited manner. The programs are highly demanding intellectually, require early commitment to a discipline, and necessitate careful planning.

The Graduate School offers combined degree programs in various disciplines. Interested students should consult The Graduate School's website (<https://www.tgs.northwestern.edu/admission/academic-programs/>) for more information, including application and degree requirements.

The Graduate School catalog (<https://catalogs.northwestern.edu/tgs/programs-az/#degreesofferedtext>) has additional information on the following combined degrees:

- Accelerated Public Health Program (Bachelor's/MPH)
- Biomedical Engineering BS/MS
- Chemical and Biological Engineering BS/MS
- Chemistry BA/MS
- Civil and Environmental Engineering BS/MS
- Comparative Literary Studies BA/MA
- Computer Engineering BS/MS
- Computer Science Bachelor's/MS
- Economics BA/MA
- Electrical Engineering BS/MS
- Engineering Design Innovation BS/MS
- Engineering Sciences and Applied Mathematics BS/MS
- French BA/MA
- Linguistics BA/MA
- Materials Science and Engineering BS/MS
- Mechanical Engineering BS/MS
- Plant Biology and Conservation Bachelor's/MS
- Theoretical and Applied Mechanics BS/MS

## Honors Program in Medical Education

The Honors Program in Medical Education (HPME) is designed for exceptionally well-prepared high school students who seek careers in medicine or medical science. Undergraduate students entering Northwestern are admitted simultaneously to the Feinberg School of Medicine. HPME is no longer accepting new students. Details regarding requirements can be found in the 2020-2021 or earlier Undergraduate Catalogs (<https://catalogs.northwestern.edu/archives/>).

## Premedical Scholars Program

[feinberg.northwestern.edu/admissions/how-to-apply/programs/nupsp/](https://feinberg.northwestern.edu/admissions/how-to-apply/programs/nupsp/)

The Northwestern Undergraduate Premedical Scholars Program (NUPSP) is a selective early MD acceptance program for high-achieving

Northwestern undergraduate students who have completed two full years of undergraduate study with a demonstrated commitment to a career in medicine who aspire to admission into Northwestern University Feinberg School of Medicine.

NUPSP is for students who have committed to the Feinberg School of Medicine as their program of choice and requires a binding decision on the part of both the applicant and the medical school. Students are accepted during their third undergraduate year for matriculation into Feinberg after their fourth undergraduate year. The program is not designed to be a fast-track to medical school. Transfer students may apply if they meet the listed requirements and coursework was conducted at a similarly rigorous program.

Each year, approximately fifteen students are offered early acceptance to Feinberg via this program. The accepted student agrees to enter FSM in July/August of the calendar year after acceptance and, assuming all program provisions are met, Feinberg agrees to commit a seat to the applicant.

NUPSP is committed to MD or MD/PhD applicants only and does not require program participants to take the MCAT Examination.

# DUAL BACHELOR'S DEGREES

Qualified students may earn bachelor's degrees from two different undergraduate schools at Northwestern. Five years of full-time study are usually required.

For information on applying to the combined programs, see Application to Dual Bachelor's Degree Programs (p. 12).

## Dual Bachelor's Degree Programs

Cross-school collaborations provide opportunities for undergraduate students to complete coursework in two Northwestern schools concurrently and to receive bachelor's degrees from both schools. Students may choose from the following dual bachelor's degree programs:

- BA/BS in Liberal Arts and Engineering (p. 38)
- BA/BMus in Liberal Arts and Music (p. 38)
- BA/BS or BS/BS in Communication and Engineering (p. 39)
- BA/BMus, BS/BMus, BA/BAMus, or BS/BAMus in Communication and Music (p. 39)
- BSED/BMus or BSED/BAMus in Education and Social Policy and in Music (p. 40)
- BS/BMus or BS/BAMus in Engineering and Music (p. 40)
- BSJ/BMus in Journalism and Music (p. 40)
- BSED/BSJ in Education and Social Policy and in Journalism (<https://catalogs.northwestern.edu/undergraduate/dual-bachelors-degrees/education-social-policy-journalism/>)

Typically, five years of faculty-approved full-time study are required to complete any of these programs and meet the Undergraduate Registration Requirement (p. 27).

Students in dual degree programs involving two schools must earn at least 42 credits in 11 quarters at Northwestern to fulfill the URR.

Students apply to the BA/BS program in liberal arts and engineering after matriculating. For information on applying to the other programs, see the section titled Application to Dual Bachelor's Degree Programs (p. 12) in Admissions. Students receiving financial aid should also note the restrictions under Financial Aid (p. 15).

## BA/BS in Liberal Arts and Engineering

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Qualified Northwestern undergraduates with strong interests in the liberal arts as well as engineering may elect to earn both a bachelor of arts degree from Weinberg College and a bachelor of science degree in an engineering field from the McCormick School (BA/BS), typically with five years of enrollment. Students may pursue most major combinations from the two schools, with some exceptions (for example students cannot combine the McCormick degree in computer science with the Weinberg College major in computer science, or the McCormick degree in materials science with the Weinberg College minor in materials science). Students

must complete all requirements of both schools including a major in each, are subject to all regulations of both schools, and must meet or exceed the required units of credit and quarters of enrollment described for the dual bachelor's degree by the Undergraduate Registration Requirement (p. 27). The following policies also apply.

- Units of credit may be double-counted toward both degrees, except as specified below with respect to major requirements. In other words, students are not required to complete 93 units of credit for the dual degree (45 for the BA plus 48 for the BS) but they must satisfy all requirements in both schools. To verify completion students are required to follow the graduation petition procedures of both schools.
- A single course may be used to fulfill a specific BA degree requirement and a specific BS degree requirement if the course is so designated by the rules of both schools, but Weinberg College has restrictions limiting double-counting of courses towards more than one major or toward both a major and a minor. Courses used to satisfy engineering major program requirements are subject to these double-counting rules with regard to the student's Weinberg College major (units vary). Students should consult a major adviser about allowable course substitutions when needed.
- Students who start in McCormick and add the BA in sophomore year or later are considered to have satisfied the requirements of a College Seminar and a First-Year Writing Seminar if they have successfully completed DSGN 106-1, DSGN 106-2, ENGLISH 106-1, and ENGLISH 106-2.
- Occasionally students may be exempted (by decision of the Weinberg College associate dean for undergraduate academic affairs) from the rule requiring a minimum of 34 units of credit in Weinberg College disciplines (for more information see the Weinberg College section of this catalog describing Requirements (p. 216)).

Interested students most often begin their studies in the McCormick School. To do the necessary planning, they should consult with a Weinberg College Adviser (<https://weinberg.northwestern.edu/undergraduate/advising/weinberg-college-advisers/>) and the McCormick School Undergraduate Engineering Office (<https://www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/>) as soon as possible after enrolling at Northwestern, and submit an application before the end of sophomore year (application instructions can be found on the Registrar's Office webpage under Add or Remove Dual Degree Program (<https://www.registrar.northwestern.edu/registration-graduation/transfer-and-test-credit/add-remove-dual-degree-program.html>)). Students should meet regularly with advisers in both schools to discuss their progress toward completion of both sets of requirements.

## BA/BMus in Liberal Arts and Music

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Some Northwestern undergraduates choose to combine intensive study in music with a broad exploration of the liberal arts and a major in a liberal arts discipline. Students accepted into the Weinberg College–Bienen School of Music dual bachelor's degree program may simultaneously earn a bachelor of arts degree from Weinberg College and a bachelor of music degree from the Bienen School (BA/BMus). Normally this takes five years of enrollment, but at a minimum students must

complete the units of credit and quarters of enrollment described for the dual bachelor's degree in the Undergraduate Registration Requirement (p. 27). The following requirements also apply.

- Units of credit may be double-counted towards both degrees, subject to some limitations. Students must earn at least 30 units in Weinberg College disciplines (what constitutes an applicable unit can be found in this Catalog under Weinberg College Requirements (p. 216)), and may double-count up to 15 Bienen School units to satisfy the required 45 units for the BA degree. Of the double-counted 15 units, up to 9 may be in applied music (see the Bienen School policies for applied music list (p. 51)). Students also must earn at least 30 Bienen School units, for a total of at least 60 units of credit for the dual degree. Courses taken in other schools of the University do not count toward these totals.
- Students satisfy the Bienen School's foundational discipline requirements automatically by completing the requirements for the Weinberg College Bachelor of Arts degree.
- Students must complete all requirements in a major for the BMus.
- Students must complete all requirements in a major for the BA.
- Certain music courses may be applied towards Weinberg College foundational discipline requirements by any student; these courses can be identified by their attributes as listed on CAESAR and in this Catalog. Additionally, up-to-date information about substitutions can be found on the Weinberg College webpage about substitutions for foundational disciplines (<https://weinberg.northwestern.edu/undergraduate/degree/post-spring-2023-degree/foundational-disciplines/substitutions.html>).

Participants in this program must be accepted by both Weinberg College and the Bienen School. Students work closely with academic advisers from both schools to develop an individual curricular program. Most follow a balanced curriculum in which about half of the coursework each year is done in each school. It is possible, however, to take mostly courses in one school in the earlier years and to then take mostly courses in the other school. Current students interested in this program should consult with the assistant dean for student affairs in the Bienen School and the Weinberg College advising office; the application to add a dual degree program should be submitted before the end of the sophomore year.

## BA/BS or BS/BS in Communication and Engineering

The dual degree program in communication and engineering offers students the opportunity to earn both a bachelor of science in engineering and either a bachelor of science or a bachelor of arts in communication in five years. Students may select any of the School of Communication's six majors and any of the available degrees in engineering.

Dual degree students must complete all requirements for both degrees and are subject to all regulations of both schools and the Undergraduate Registration Requirement (p. 27). Each school enforces all of its policies regarding requirements.

Current students interested in pursuing the dual degree in communication and engineering should contact advisers in the Undergraduate Engineering Office (<https://www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/>) and a School of

Communication adviser in the desired major. Information for School of Communication advisers is available at [advising.soc.northwestern.edu/about/advisors-by-program/](https://advising.soc.northwestern.edu/about/advisors-by-program/) (<https://advising.soc.northwestern.edu/about/advisors-by-program/>).

## BA/BMus, BS/BMus, BA/BAMus, or BS/BAMus in Communication and Music

The dual degree program in communication and music offers students the opportunity to earn either a bachelor of science or bachelor of arts in communication and either a bachelor of music or bachelor of arts in music in five years. Students may select any of the School of Communication's six majors and any of the available programs in music.

Dual degree students must complete all requirements for both degrees (see the double counting allowances in the chart below) and the Undergraduate Registration Requirement (p. 27). Each school enforces all of its policies regarding requirements.

Current students interested in pursuing the dual degree in communication and music should contact the assistant dean for student affairs in the Bienen School of Music and a School of Communication adviser in the desired major. Information about advising in the School of Communication is available at <https://advising.soc.northwestern.edu/>.

## BA/BMus or BS/BMus Course Requirements

Course	Title
BMus degree (Bienen):	complete all core and major requirements
BMus degree (Bienen):	all Foundational Discipline and elective requirements are fulfilled by communication degree requirements
BA or BS degree (SoC):	complete all major requirements
BA or BS degree (SoC):	complete all distribution and language requirements according to SoC policy

## BA/BAMus or BS/BAMus Course Requirements

Course	Title
BAMus degree (Bienen):	complete all core and major requirements
BAMus degree (Bienen):	complete all Foundational Discipline and language requirements according to Bienen School policy, with the following double counting allowances:
SoC math/science/technology distribution courses	may count toward Natural Sciences and Empirical and Deductive Reasoning Foundational Discipline requirements
SoC individual social/behavior distribution courses	may count toward Social and Behavioral Sciences Foundational Discipline requirements
SoC major courses	may count for English composition requirement
BA or BS degree (SoC):	complete all major requirements
BA or BS degree (SoC):	complete all distribution and language requirements according to SoC policy

## BSED/BMus or BSED/BAMus in Education and Social Policy and in Music

The dual degree program in music and education and social policy offers students the opportunity to earn a bachelor of music/bachelor of arts in music and a bachelor of science in education and social policy in five years, developing their passion for music as a tool for creating change in learning environments, human relationships, organizations, and the field of social policy. Students may select any of the Bienen School's undergraduate majors and any of SESP's undergraduate majors except secondary teaching.

Dual degree students must complete all requirements for both degrees (see the double counting allowances in the chart below) and the Undergraduate Registration Requirement (p. 27). Each school enforces all of its policies regarding requirements.

Current students interested in pursuing the dual degree in music and education and social policy should contact the assistant dean for student affairs in the Bienen School of Music and the assistant dean for student affairs in SESP.

### BSED/BMus Course Requirements

Course	Title
BMus degree (Bienen): complete all core and major requirements	
BSED degree (SESP): complete all core and major requirements	
Dual degree distribution requirements:	
Natural Sciences (2)	
Empirical and Deductive Reasoning (2; MUSIC 111-1,2,3 and MUSIC 211-1,2,3 fulfill this requirement)	
Social & Behavioral Sciences (2; SESP courses fulfill this requirement)	
Historical Studies (2)	
Ethical and Evaluative Thinking (2)	
Literature & Arts (2; MUSIC 214-0, MUSIC 215-0, and MUSIC 216-0 fulfill this requirement)	

### BSED/BAMus Course Requirements

Course	Title
BAMus degree (Bienen): complete all core and major requirements	
BSED degree (SESP): complete all core and major requirements	
Dual degree distribution requirements:	
Natural Sciences (2)	
Empirical and Deductive Reasoning (2)	
Social and Behavioral Sciences (2; SESP courses fulfill this requirement)	
Historical Studies (2)	
Ethical and Evaluative Thinking (2)	
Literature & Arts (2)	
Language (Two years or proficiency)	

## BS/BMus or BS/BAMus in Engineering and Music

Highly capable students who have a strong interest in and commitment to both engineering and music may apply to the McCormick School–Bienen School dual bachelor's degree program. Students accepted into this program may simultaneously earn a bachelor of science degree from

the McCormick School and a bachelor of music or bachelor of arts in music degree from the Bienen School (BS/BMus or BS/BAMus).

Dual degree students must complete all requirements for both degrees (see the double counting allowances in the chart below) and the Undergraduate Registration Requirement (p. 27). Each school enforces all of its policies regarding requirements.

The program may be entered no later than the beginning of the sophomore year, and admission requires concurrent approval of both the McCormick School and the Bienen School. Current students interested in this program should consult with advisers in the Undergraduate Engineering Office (<https://www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/>) in the McCormick School and the assistant dean for student affairs in the Bienen School.

### BS/BMus Course Requirements

Course	Title
BMus degree (Bienen): complete all core and major requirements	
BS degree (MEAS): complete all core and major requirements	
BS degree (MEAS): complete the theme by fulfilling the appropriate requirements <sup>1</sup>	
Dual degree Foundational Discipline requirements:	
Two courses chosen from McCormick's Social and Behavioral Sciences approved course list	

### BS/BAMus Course Requirements

Course	Title
BAMus degree (Bienen): complete all core and major requirements	
BS degree (MEAS): complete all core and major requirements	
BS degree (MEAS): complete the theme by fulfilling the appropriate requirements <sup>1</sup>	
Dual degree Foundational Discipline courses:	
Natural Sciences (2; engineering courses fulfill this requirement)	
Empirical and Deductive Reasoning (2; engineering courses fulfill this requirement)	
Social and Behavioral Sciences (2, chosen from McCormick's Social/Behavioral Sciences approved course list)	
Historical Studies (2)	
Ethical and Evaluative Thinking (2)	
Literature and Arts (2)	
English composition/writing (engineering courses fulfill this requirement)	
Foreign language (Two years or proficiency)	

<sup>1</sup> See the main McCormick catalog page (p. 144) for complete details on completing the theme.

## BSJ/BMus in Journalism and Music

This dual bachelor's degree program allows students to earn both a bachelor of science in journalism from Medill and a bachelor of music from the Bienen School (BSJ/BMus). The program is intended to prepare students for journalism careers emphasizing music and arts reporting. Prospective students typically apply to the program while applying for undergraduate admission to Northwestern.

Dual degree students must complete all requirements for both degrees (see the double counting allowances in the chart below) and the Undergraduate Registration Requirement (p. 27). Each school enforces all of its policies regarding requirements. A minimum of 25 non-

music units are required for the journalism degree; a minimum of 30 units are required for the music degree.

Current students interested in pursuing the dual degree in journalism and music should contact the assistant dean for student affairs in the Bienen School and the assistant dean of student affairs in Medill.

## BSJ/BMus Course Requirements

Course	Title
BM degree (Bienen):	complete all core and major requirements
BM degree (Bienen):	all distribution requirements are fulfilled by journalism degree requirements
BSJ degree (Medill):	complete all degree requirements with the following double counting allowances:
MUSIC 111-1, MUSIC 111-2, and MUSIC 111-3:	1 unit Empirical and Deductive Reasoning
MUSIC 211-1, MUSIC 211-2, and MUSIC 211-3:	1 unit Empirical and Deductive Reasoning
MUSIC 214-0:	1 unit Literature and Arts
MUSIC 215-0:	1 unit Literature and Arts
MUSIC 216-0:	1 unit Literature and Arts
Music major courses	fulfill "WCAS Elective Concentration"
Music major courses	fulfill all but three "Electives"

# STUDY OUTSIDE NORTHWESTERN

## Study Abroad

[northwestern.edu/abroad](http://northwestern.edu/abroad)

Study abroad is an integral part of many students' Northwestern experience. With early planning, students from all schools and majors are able to study abroad during their time at Northwestern.

The Global Learning Office (GLO), housed within the Northwestern Buffett Institute for Global Affairs, offers credit-bearing study abroad, exchange, research, and academic internship opportunities for Northwestern University undergraduate students. Northwestern administers or affiliates with more than 150 programs in 50 countries, offering a wide variety of program structures, lengths, terms and academic focuses to meet students' diverse needs and goals. These credit-bearing global learning opportunities form a crucial part of the Northwestern experience and help prepare students for success in an increasingly interconnected world.

Study abroad is available during the academic year as well as summer and need not delay graduation. To apply, students submit a study abroad application, including signatures from school advisers and, in many cases, department advisers; approval is required before the study abroad experience. All students approved by Northwestern to study abroad remain registered at Northwestern while abroad.

Northwestern is committed to making study abroad financially accessible to all students. Students participating in University exchange programs and some programs administered by the University continue to pay Northwestern tuition. For all other programs, students pay the program fee plus a Northwestern study abroad administrative fee. Northwestern financial aid applies to students participating in Northwestern-sponsored and affiliated programs, and students may also apply for Northwestern grant assistance to help offset the cost of their programs. Additional sources of funding include GLO scholarships (<https://www.northwestern.edu/abroad/money-matters/scholarships-funding/glo-scholarships-funding.html>), opportunities through the Office of Fellowships (<https://www.northwestern.edu/fellowships/>), and external scholarships (<https://www.northwestern.edu/abroad/money-matters/scholarships-funding/>). Students who wish to participate in unaffiliated programs must petition for permission to apply. No financial aid is available from the University for students on unaffiliated programs, and Northwestern cannot process their outside aid.

Study abroad programs vary, and may include language or other academic prerequisites; interested students should consult with study abroad advisers early in their Northwestern careers. Other resources include information sessions, an annual study abroad fair, GLO Student Ambassadors, and detailed information about study abroad programs and policies on the GLO website (<https://www.northwestern.edu/abroad/>).

## Field Studies and Internships

Many off-campus field studies, internships, and research opportunities sponsored by schools and departments, including McCormick's co-op program, are available to Northwestern students. The programs vary greatly. Some carry academic credit and/or a stipend. Some are done in conjunction with coursework, while others require full-time commitment and may involve living away from campus. Field study (p. 267) and

internship opportunities are available during both the regular academic year and Summer Session. See the individual schools and departments in this catalog for details. Additional information on internship opportunities is available from Northwestern Career Advancement.

# UNDERGRADUATE RESEARCH

## Fellowships

[northwestern.edu/fellowships](http://northwestern.edu/fellowships)

Northwestern undergraduates win an array of national and international fellowships. Such awards fund study, research, and service opportunities in the United States and around the globe. The Office of Fellowships works with students in group and individual advising sessions to identify fellowships that fit their educational, professional, and personal goals. The office offers guidance on the preparation of written applications and conducts practice interviews.

## Independent Study (399)

Many departments offer seminars and independent studies for qualified undergraduates. An independent study, typically numbered 399, in any department enables a student to engage in individual special study and research, which may involve work in a laboratory or library, fieldwork outside the University, or the creation of a work of art. The maximum credit a student may receive for 399 (or equivalent independent study) during any quarter is 2 units.

## Support for Undergraduate Research Endeavors

[undergradresearch.northwestern.edu](http://undergradresearch.northwestern.edu)

The Office of Undergraduate Research (OUR) awards more than \$1.5 million annually to students pursuing research and creative projects across all fields of study. OUR uses an advising-centric model that focuses on helping students learn how to get started and how to write successful grant proposals; OUR advisors meet one-on-one with more than 500 students a year, totaling over 1,200 advising appointments.

OUR has three core programs. The Undergraduate Research Assistant Program (URAP) allows faculty to apply for funding to hire students to help with their own projects in a formal mentoring environment designed to foster rapid development. The program focuses on assisting students just getting started in research and prefers disciplines where funding for undergraduates is hard to get, such as in the humanities or creative arts.

The Undergraduate Research Grant (URG) program funds independent research and creative projects across all disciplines. The 35+ member faculty review committee is currently charged with offering a strictly merit-based review of grant proposals. This process means that the committee can fund any and all projects that they feel are worthy. If a student has a solid idea, works with faculty mentors, and uses the Office's advising to learn how to write a successful grant proposal, then the competition is not between students, but rather challenges the individual student to discover what is needed in a field and create a project to potentially address this need to gain funding. These grants regularly transform a student's experience of college and beyond. Finally, OUR runs the Undergraduate Research and Arts Exposition, an annual showcase of student work through oral presentations, posters, and a Creative Arts Festival. For all participants, OUR runs workshops designed to help students develop strong and effective communication skills, specifically for an audience that isn't already familiar with their field of interest.

Other OUR grants provide support for intensive language study or for conference travel. An annual \$9,500 award—the Circumnavigators Travel-Study Grant, jointly funded by Northwestern University and

the Circumnavigators Club Foundation—enables one undergraduate researcher to undertake around-the-world travel during the summer before their senior year. OUR recently launched the Emerging Scholars Program, a 15-month funded program specifically for students who identify as first generation, lower income, people of color, and/or marginalized. This grant focuses on providing opportunities for students to get started in research and/or creative activities in the arts, humanities, journalism, and social sciences, and this program is focused on supporting research and creative art that speaks to issues of social justice, diversity, equity, and inclusion. In addition, OUR maintains a comprehensive website (<https://undergradresearch.northwestern.edu/>) full of resources for students looking to get started in research.

The Office of Undergraduate Research also collaborates with a variety of student organizations committed to supporting research, including the Northwestern Undergraduate Research Journal (NURJ) (<https://thenurj.com/>), the Chicago Area Undergraduate Research Symposium (CAURS) (<https://www.caurs.com/>), and TEDx Northwestern (<https://www.tedxnorthwesternu.com/>).

# SPECIAL PROGRAMS & COURSES

## Special Courses

### Residence-Linked Seminars

Students in residential colleges or residential communities may take residence-linked seminars on a theme of common interest. Associated faculty members direct the seminars, which meet in the residence and are normally limited to 10 students. The course number and title indicate the Weinberg distribution area in which a seminar counts. Proposals for seminars must be approved by Weinberg College.

### Student-Organized Seminars (SOS)

Students who wish to pursue studies not included in the catalog may plan and initiate their own courses under the supervision of sponsoring faculty members. SOS credit courses may be developed in all undergraduate schools except the Medill School of Journalism, Media, Integrated Marketing Communications.

## College Transition Programs

Numerous opportunities, both academic and nonacademic, exist for new undergraduates to transition to Northwestern before the start of the regular academic year. Academic opportunities include the Arch Scholars (<https://www.weinberg.northwestern.edu/undergraduate/first-year-transfer/first-year/arch-scholars/>) programs—Bridge I, Bio&ChemEXCEL, NU Bioscientist and the Posner Research Program – plus the Summer Academic Workshop in Weinberg College, the SESP Leadership Institute (<https://admissions.northwestern.edu/academics/pre-enrollment/sesp-leadership-institute.html>) and the EXCEL (<https://www.mccormick.northwestern.edu/students/undergraduate/excel/>) (Excellence in Engineering Leadership) program in the McCormick School. Beyond the first year, Weinberg College offers Bridge II summer preparatory courses for chemistry and economics courses typically taken in the sophomore year.

## Innovation in News and Storytelling

[knightlab.northwestern.edu](http://knightlab.northwestern.edu)

Northwestern University Knight Lab is a community of designers, developers, students, and educators working on experiments designed to push journalism into new spaces.

The Lab provides an open, collaborative environment for interdisciplinary exploration and conversation, where students and professionals learn together and from one another. In short, we're energized by hard questions worth answering; we believe in the process as much as the product.

## Military Programs

The military studies programs are administered by the Office of the Provost. ROTC students are encouraged to review and use the Northwestern Undergraduate Education Guidance for ROTC Students.pdf

## Naval Science

Northwestern students may participate in the programs of the Navy Reserve Officers Training Corps (NROTC). This program is based at Northwestern and will include students from Loyola University Chicago as well. NROTC consists of four years of naval science classes ranging from basics of maritime navigation and weapon systems to courses in leadership and ethics. Credits earned for Naval Science courses may be used towards Northwestern degree requirements. Students who participate in NROTC may be eligible for federal NROTC scholarships that may partially or fully pay tuition or room and board at Northwestern. Complete information may be obtained from:

Northwestern University NROTC  
617 Haven Street  
Evanston, IL 60208  
Phone: (847) 491-2039  
[nrotc@northwestern.edu](mailto:nrotc@northwestern.edu)

Naval Science Courses (p. 45)

More Information: <https://sites.northwestern.edu/nrotc/>

## Airforce/Aerospace Science

Northwestern students may participate in the programs of the Air Force Reserve Officers Training Corps through a cross-enrollment agreement with the University of Chicago. AFROTC consists of four years of aerospace studies classes and a corresponding leadership laboratory where students apply leadership skills, demonstrate command and effective communication, develop physical fitness, and practice military customs and courtesies. Credits earned in approved aerospace studies courses at University of Chicago may be counted toward degree requirements within the limits of the Northwestern school in which the student is registered. Students who participate in AFROTC may be eligible for federal AFROTC scholarships that may partially or fully pay tuition at Northwestern. Complete information may be obtained from:

Air Force ROTC  
University of Chicago  
Woodlawn Social Services Building  
950 E. 61<sup>st</sup> Street  
Chicago, Illinois 60637

U.S. Air Force ROTC University of Chicago (<https://www.afrotc.com/college/university-of-chicago/>)

Airforce/Aerospace Studies Courses

## Military Science

Northwestern students may participate in the programs of the Army Reserve Officers Training Corps through a cross-enrollment agreement with the ROTC battalion at Loyola University Chicago. Credits earned in approved military science courses may be counted toward degree requirements within the limits of the Northwestern school in which the student is registered. Complete information may be obtained from the:

LUC Department of Military Science  
Campion Hall, Room 001  
1144 West Loyola Avenue  
Chicago, Illinois 60626  
Phone 773-508-8980  
[luc.edu/militaryscience](http://luc.edu/militaryscience) (<https://luc.edu/militaryscience/>)

Army Studies Courses

## Naval Science

[northwestern.edu/nrotc](http://northwestern.edu/nrotc)

The Northwestern University Naval Reserve Officers Training Corps (NROTC) Unit was established in 1926 by congressional authorization when Northwestern became one of the original six universities to create a naval science department. The professor of naval science chairs Northwestern's Department of Naval Science. Department faculty members are commissioned officers serving on active duty in the US Navy or Marine Corps. They are selected and nominated by their respective services and screened and approved by the University. The unit is located at:

617 Haven Street  
Evanston, Illinois 60208-4140  
phone 847-491-5284

If you have any questions about this program, please contact us at [nrotc@northwestern.edu](mailto:nrotc@northwestern.edu)

## Naval ROTC Programs

NROTC offers young men and women the opportunity to obtain leadership and management experience as commissioned officers in the US Navy (Navy option) or Marine Corps (Marine Corps option) after graduation from Northwestern, through either the Scholarship Program or the non-scholarship College Program.

At Northwestern, NROTC midshipmen lead essentially the same campus life as other students. They make their own arrangements for room and board and participate in campus activities of their choice, including the opportunity for University-sponsored overseas study. There are no prescribed academic majors for NROTC students, though scientific and technical studies are encouraged. NROTC students are required to complete the naval science curriculum, attend a weekly two-hour laboratory, and participate in four to six weeks of active-duty summer training at sea or ashore. NROTC students are required to abide by the Midshipmen Regulations issued by the unit. Students may enroll in the NROTC program at any time from the beginning of their first year of enrollment until the end of their sophomore year.

## Courses

In addition to the required courses listed here, participants in the NROTC program must satisfactorily complete a number of other courses prescribed by the Department of the Navy, which are offered by other departments of the University. Current information on those course requirements is available from the NROTC unit.

With the exception of NAV\_SCI 110-0 and NAV\_SCI 355-0 Directed Study, Northwestern course credit is granted for successful completion of naval science courses; applicability to graduation requirements is subject to limitations imposed by the responsible University faculty committees and by the undergraduate schools. For more information on credit availability, consult the dean of each school. Naval science courses are open to non-NROTC students with department approval.

### NAV\_SCI 110-0 Introduction to Naval Organization (0 Unit)

This course is a general introduction to the USN and USMC that emphasizes organizational structure, warfare components and assigned roles/missions of USN/USMC. It covers all aspects of Naval Service from its relative position within the DoD to the specific warfare communities/

career paths and includes basic elements of leadership and USN and USMC Core Values.

### NAV\_SCI 120-0 Sea Power and Maritime Affairs (1 Unit)

This course is a study of the U.S. Navy and the influence of sea power on history that incorporates both a historical and political science process to explore the major events, attitudes, personalities, and circumstances that have imbued the U.S. Navy with its proud history and rich tradition.

### NAV\_SCI 210-0 Marine Navigation (1 Unit)

This course is an in-depth study of the theory, principles, procedures, and application of plotting, piloting, and electronic navigation, as well as an introduction to maneuvering boards. Students learn piloting techniques, the use of charts, the use of visual and electronic aids, and the theory of operation of both magnetic and gyrocompasses. Students develop practical skills in plotting and electronic navigation.

### NAV\_SCI 220-0 Naval Ship Systems II - Naval Weapons (1 Unit)

This course outlines the theory and employment of weapons systems. Students explore the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. Fire control systems and major weapons types are discussed, including capabilities and limitations. The physical aspects of radar and underwater sound are described. Facets of command, control, communications, computers, and intelligence are explored as a means of weapons system integration.

### NAV\_SCI 230-0 Leadership and Management Seminar for Naval Officers (1 Unit)

The course introduces the student to many of the fundamental concepts of leading Sailors and Marines, which shall be expanded upon during the continuum of leadership development throughout NROTC. It develops the elements of leadership vital to the effectiveness of Navy/Marine Corps officers by reviewing the theories and parameters of leadership and management within and outside of the Naval Service.

### NAV\_SCI 331-0 Naval Operations (1 Unit)

This course is a continued study of relative motion, formation tactics, and ship employment. It includes introductions to Naval operations and operations analysis, ship behavior and characteristics in maneuvering, applied aspects of ship handling, afloat communications, Naval command and control, Naval warfare areas, and joint warfare.

### NAV\_SCI 336-0 Evolution of Warfare (1 Unit)

Students trace the development of warfare to the present day. It is designed to cover the causes of continuity and change in the means and methods of warfare. It addresses the influence of political, economic, and societal factors on the conduct of war, with significant attention focused on the role of technological innovation in changing the battlefield. Students will explore the contribution of preeminent military theorists and battlefield commanders to our modern understanding of the art and science of war.

### NAV\_SCI 338-0 Fundamentals of Maneuver Warfare (1 Unit)

Fundamentals of Maneuver Warfare is a course designed to introduce you to the core principles and history of the United States Marine Corps (USMC) as the premier organization in maneuver warfare. This course blends theoretical knowledge with practical insights, utilizing historical examples from past military operations and current doctrine to develop critical thinkers and scholars in the profession of arms.

### NAV\_SCI 341-0 Naval Leadership and Ethics (1 Unit)

The course integrates an intellectual exploration of Western moral traditions and ethical philosophy with a variety of topics, such as military leadership, core values, professional ethics, the Uniform Code of Military Justice, Navy regulations, and discussions relating to the roles of enlisted

members, junior and senior officers, command relationships, and the ethical conduct of warfare.

**NAV\_SCI 345-0 Naval Ship Systems I - Naval Engineering (1 Unit)**

Students learn detailed ship design, hydrodynamic forces, stability, propulsion, electrical theory and distribution, hydraulic theory and ship control, and damage control. The course includes basic concepts of theory/design of steam, gas turbine, diesel, and nuclear propulsion. Case studies on leadership/ethical issues in the engineering arena are also covered.

**NAV\_SCI 350-0 Naval Science Lab (0 Unit)**

Topics shall cover general Navy/Marine Corps mission and policies, force protection, operational security, watch standing, physical fitness, nutrition, stress management, and other professional development subjects not normally included in the curriculum of the Naval Science courses.

**NAV\_SCI 355-0 Directed Study (0 Unit)**

# ACADEMIC CALENDAR

## Academic Calendar 2024–2025

The University reserves the right to make changes to this calendar. A detailed current calendar can be found at [www.registrar.northwestern.edu/calendars](http://www.registrar.northwestern.edu/calendars).

### Fall Quarter 2024

Date	Event
<b>September</b>	
24	Fall classes begin
<b>November</b>	
27	Thanksgiving break begins, 6:00 p.m.
<b>December</b>	
2	Fall classes resume
7	Fall classes end
9	Fall final exams begin
14	Fall final exams end. Fall term ends.
20	Degrees conferred for fall quarter graduates

### Winter Quarter 2025

Date	Event
<b>January</b>	
6	Winter classes begin
20	Martin Luther King Jr. Day (no classes)
<b>March</b>	
15	Winter classes end
17	Winter final exams begin
22	Winter final exams end. Winter term ends.
22	Spring Break begins
28	Degrees conferred for winter quarter graduates

### Spring Quarter 2025

Date	Event
<b>March</b>	
31	Spring Break ends
<b>April</b>	
1	Spring classes begin
<b>May</b>	
26	Memorial Day (no classes)
<b>June</b>	
7	Spring classes end
9	Spring final exams begin
13	Spring final exams end. Spring term ends.
20	Degrees conferred for spring quarter graduates

### Summer Session 2025

Date	Event
<b>June</b>	
23	Summer classes begin
<b>July</b>	

4	Independence Day (no classes)
<b>August</b>	
31	Summer term ends
<b>September</b>	
5	Degrees conferred for summer quarter graduates

# ACADEMIC INTEGRITY

Academic integrity at Northwestern is based on a respect for individual achievement that lies at the heart of academic culture. Every faculty member and student, both graduate and undergraduate, belongs to a community of scholars where academic integrity is a fundamental commitment.

All students registered for classes at Northwestern must adhere to the University's standards of academic integrity (<https://www.northwestern.edu/provost/policies-procedures/academic-integrity/principles.html#standards>). Questions about the acceptability of specific behavior should be addressed to the appropriate faculty member or school dean. The following is a non-exhaustive list of types of behavior that violate the standards of academic integrity:

- *Cheating*: using unauthorized notes, study aids, or information on an examination; altering a graded work after it has been returned, then submitting the work for regrading; allowing another person or resource (including, but not limited to, generative artificial intelligence) to do one's work and submitting that work under one's own name; submitting identical or similar papers for credit in more than one course without prior permission from the course instructors
- *Plagiarism*: submitting material that in part or whole is not entirely one's own work without attributing those same portions to their correct source; Plagiarism includes, but is not limited to, the unauthorized use of generative artificial intelligence to create content that is submitted as one's own
- *Fabrication*: falsifying or inventing any information, data, or citation; presenting data that were not gathered in accordance with standard guidelines defining the appropriate methods for collecting or generating data and failing to include an accurate account of the method by which the data were gathered or collected
- *Obtaining an unfair advantage*: stealing, reproducing, circulating, or otherwise gaining access to examination materials prior to the time authorized by the instructor; stealing, destroying, defacing, or concealing library materials with the purpose of depriving others of their use; unauthorized collaborating on an academic assignment; retaining, possessing, using, or circulating previously given examination materials, where those materials clearly indicate that they are to be returned to the instructor at the conclusion of the examination; intentionally obstructing or interfering with another student's academic work; recycling one's own work done in previous classes without obtaining permission from one's current instructor; otherwise undertaking activity with the purpose of creating or obtaining an unfair academic advantage over other students' academic work
- *Aiding and abetting dishonesty*: providing material, information, or other assistance to another person with knowledge that such aid could be used in any of the violations stated above; providing false information in connection with any inquiry regarding academic integrity; providing (including selling) class materials to websites that sell or otherwise share such materials — including homework, exams and exam solutions, submitted papers or projects, as well as original course materials (for example, note packets, PowerPoint decks, etc.). In addition to violating Northwestern's policies on academic integrity, such conduct may also violate University policies related to copyright protection.
- *Falsification of records and official documents*: altering documents affecting academic records; forging signatures of authorization or

falsifying information on an official academic document, grade report, letter of permission, petition, drop/add form, ID card, or any other official University document

- *Unauthorized access to computerized academic or administrative records or systems*: viewing or altering computer records; modifying computer programs or systems; releasing or dispensing information gained via unauthorized access; interfering with the use or availability of computer systems or information

It is the responsibility of every member of the academic community to be familiar with the specific procedures of his or her school. A student who violates these policies may be subject to sanctions, including but not limited to one or more of the following: a letter of reprimand; a defined period of suspension of one or more quarters; ineligibility for certain awards, honors and special programs; revocation of an awarded degree; expulsion from the University (noted on official transcript); any appropriate combination of the above. Students charged with an academic integrity violation may not change their registration or grading basis in a course in which the charge is pending, or in which a finding of an academic integrity violation has been made. Information on procedures that will be followed in cases of alleged violations of academic integrity may be obtained from the dean's office of each school. This will include information regarding how decisions may be appealed. A complete statement of the University's principles regarding academic integrity may be obtained from the Office of the Provost at [www.northwestern.edu/provost/policies-procedures/academic-integrity/index.html](https://www.northwestern.edu/provost/policies-procedures/academic-integrity/index.html).

# ACADEMIC SUPPORT

## School and Program Advisors and Support

Every undergraduate student is assigned at least one academic advisor within their school, often directly related to the major(s) they have chosen. Students can find a list of their advisor(s) and make an appointment with them in ConnectNU (<https://www.northwestern.edu/undergraduate-advising/for-students/connectnu/>). Robust information about advising and academic support resources is available at the websites of the Weinberg College of Arts and Sciences (<https://www.weinberg.northwestern.edu/undergraduate/advising/>), the McCormick School of Engineering (<https://www.mccormick.northwestern.edu/students/undergraduate/>), the School of Education and Social Policy (<http://www.sesp.northwestern.edu/ugrad/student-affairs-staff/>), the Medill School of Journalism, Media, Integrated Marketing Communications (<http://www.medill.northwestern.edu/journalism/undergraduate-journalism/life-at-medill/student-life/>), the Bienen School of Music (<https://music.northwestern.edu/resources/students/undergraduate/advising/>), and the School of Communication (<https://advising.soc.northwestern.edu/>).

## Academic Support and Learning Advancement

If you're a Northwestern student, you're a skilled learner — but that doesn't mean you never need help. The best learners are the ones who seek and give support when it's needed. The Academic Support and Learning Advancement (<https://www.northwestern.edu/academic-support-learning/>) office provides peer tutoring, study groups, academic leadership development, and more.

Programs focus on overall academic strategies and course support, providing undergraduates with sustained small-group mentoring, individual coaching, interactive workshops, and course-specific sustained or drop-in tutoring. Advisors are also available to help students find the best resources for their needs and develop a plan to achieve their academic goals.

The office is located in the University Library, Level 2, near The Writing Place.

## AccessibleNU

Northwestern University and AccessibleNU (<https://www.northwestern.edu/accessiblenu/>) are committed to providing a supportive and challenging environment for all students with disabilities who attend the University. AccessibleNU works to provide students with disabilities a learning and community environment that affords them full participation, equal access, and reasonable accommodation. The majority of accommodations, services, and auxiliary aids provided to eligible students are coordinated by AccessibleNU.

The Evanston office is located at 2122 Sheridan Road, Suite 130. The building entrance is at 600 Haven Street.

## Health Professions Advising

Health Professions Advising (<http://www.northwestern.edu/health-professions-advising/>) assists students in developing meaningful educational plans that are compatible with their life goals. Using an

intentional approach to academic advising based on advising theories and knowledge of counseling, the Center staff will:

- Provide information about academic programs and resources
- Provide assistance to students in refining goals and objectives, understanding available choices, and assessing the consequences of alternative courses of action
- Reinforce the philosophy that the ultimate responsibility for making decisions about educational plans and life goals rests with the individual student

The office is located at 1940 Sheridan Road.

## The Writing Place

The Writing Place (<http://www.writing.northwestern.edu/>) is Northwestern's center for peer writing consultations. Whether you are writing a paper for a class, composing application letters and essays, or working on some other writing project, a Writing Place consultant can help you at any stage of the writing process, from talking about ideas to developing a plan to revising and editing a draft.

Writing Place consultants are not graders or ghostwriters, but attentive readers who are trained to engage you in a conversation about your writing and help you plan and revise it. Consultations are free and available to anyone in the Northwestern community.

The office is located in the University Library, Level 2, near Academic Support and Learning Advancement.

# HENRY AND LEIGH BIENEN SCHOOL OF MUSIC

[music.northwestern.edu](http://music.northwestern.edu)

## Overview

One of the oldest degree-granting music institutions in the United States, Northwestern University's Henry and Leigh Bienen School of Music combines a nationally ranked music program of conservatory-level intensity with the academic rigor and scholarly resources found only at a world-class private research university. Entering first-year undergraduates show the highest level of achievement in music as well as academics. The school believes that by carefully developing outstanding musicianship and keen intelligence, while nurturing a curiosity about the world, we can best encourage the emergence of each student's unique creative voice.

Key to all performance majors is intensive one-on-one training with a celebrated faculty that includes members of the Chicago Symphony and Lyric Opera of Chicago Orchestras, internationally acclaimed soloists, sought-after conductors, and distinguished scholars and clinicians. Students work in small classes with these dedicated teachers and artists in a curriculum that comprises music history and theory, aural and piano skills, instrumental and voice lessons, and advanced electives. Special programs include a five-year dual-degree curriculum—enabling students to earn a degree in music as well as one in communication, education and social policy, engineering, journalism, or arts and sciences—and the ad hoc (self-designed) major. Additionally, the world-class music making and other cultural resources of downtown Chicago provide exceptional opportunities for learning outside the classroom.

## Facilities

The Bienen School of Music occupies three lakefront buildings. The Patrick G. and Shirley W. Ryan Center for the Musical Arts houses the 400-seat Mary B. Galvin Recital Hall, the 150-seat David and Carol McClintock Choral and Recital Room, and the 150-seat Shirley Welsh Ryan Opera Theater as well as administrative and faculty offices, teaching studios, classrooms, and practice rooms. The building connects with Regenstein Hall, which houses the 200-seat Regenstein Masterclass Room, the Office of Bands, rehearsal facilities, faculty studios, and practice rooms. The 1,000-seat Pick-Staiger Concert Hall houses rehearsal facilities and the Concert Management Office.

## Musical Organizations

As a part of their program of study, music majors are required to participate in music school ensembles. Students from all other schools of the University are also encouraged to participate in any organizations for which they qualify. Ensembles include Symphony Orchestra, Chamber Orchestra, and Philharmonia; Symphonic Wind Ensemble, Symphonic Band, Concert Band, and Wildcat Marching Band; Bienen Contemporary/Early Vocal Ensemble, University Chorale, University Singers, Alice Millar Chapel Choir, and Northwestern Camerata; Jazz Orchestra and jazz small ensembles; Baroque Music Ensemble and Contemporary Music Ensemble; Guitar Ensemble and Percussion Ensemble; and chamber music ensembles.

## Music Library

Among the nation's largest music libraries, the Northwestern University Music Library supports all areas of musical study with a broad collection of books, scores, sound recordings, periodicals, and online resources. The facility, located in historic Deering Library, offers a reading room rich in reference materials, a music listening center, and a computer lab equipped with specialized music hardware and software. The Music Library is also distinguished internationally for its extensive collection of contemporary music, which includes one copy of nearly every score published since 1945 as well as many original manuscripts by prominent composers such as Pierre Boulez, John Cage, George Crumb, and Iannis Xenakis. The Music Library's collections and staff serve the Bienen School of Music, the entire Northwestern University community, and researchers from around the world. For more information see [www.library.northwestern.edu/music](http://www.library.northwestern.edu/music).

## Programs of Study

The Bienen School of Music offers programs leading to the professional degrees of bachelor of music, master of music, and doctor of musical arts. The school also offers two nonprofessional degrees, the bachelor of arts in music and bachelor of science in music.

The curriculum allows flexibility for students while providing an education that is foundational for all musicians. Applicants in all areas who are accepted by the Bienen School enter directly into a program of specialization that begins in the first undergraduate year. The music core studies, taken by all students, require the acquisition of fundamental competencies and provide fundamental and essential experiences that complement the specialized studies in the declared major. Students are also required to complete studies in a number of allied subjects throughout the University.

## Bachelor of Music (BMus)

Courses of study leading to the bachelor of music degree include majors in piano, strings, voice, winds and percussion, jazz, music cognition, music composition, music education, musicology, and music theory. Candidates for the degree of bachelor of music must complete a minimum of 48 units. For bachelor of music degree requirements, see the program page specific to the area of study.

## Bachelor of Arts in Music (BAMus) and Bachelor of Science in Music (BSMus)

The bachelor of arts in music and bachelor of science in music are nonperformance degrees that offer a broad liberal arts education with a major in music. The requirements of the BAMus are essentially identical to those for the BA in the Weinberg College of Arts and Sciences; the requirements for the BSMus are the same as those for the BAMus except that the BSMus has no foreign language requirement. Within these degrees' focus on music, there are a wide range of possibilities for study; students may choose to specialize in one of the available academic areas (music cognition, music composition, music education, musicology, or music theory) by fulfilling their Music Electives with courses in their area of interest, they may choose not to specialize (in which case the Music Electives are fulfilled with any music courses), or they may design an ad hoc specialization, consisting of 10 units which substitute for the Music Electives category below.

For BAMus and BSMus degrees, 45 units are required:

Course	Title
MUSIC 111-1	Music Theory I
& MUSIC 111-2	and Music Theory II
& MUSIC 111-3	and Music Theory III
MUSIC 211-1	Music Theory IV
& MUSIC 211-2	and Music Theory V
& MUSIC 211-3	and Music Theory VI
MUSIC 126-1	Aural Skills I
& MUSIC 126-2	and Aural Skills II
& MUSIC 126-3	and Aural Skills III
MUSIC 214-0	The Classical Canon
& MUSIC 215-0	and Performers and Performance
& MUSIC 216-0	and Music in the Present
Three quarters ensemble (1.5 units)	
One 300-level elective in MUSICOL, MUS_COMP, MUS_TECH, MUS_THRY, or MUSIC_ED	
Music electives (10 units)	
Foundational Disciplines (13 units): Natural Sciences (2), Empirical and Deductive Reasoning (2), Social/Behavioral Sciences (2), Historical Studies (2), Ethical and Evaluative Thinking (2), Literature and Arts (2), and English Composition (1)	
Other Electives (12 units, 6 of these are foreign language courses for BAMus students)	

## Overlay Requirement in Business or Finance

All Bienen School undergraduates are required to complete an "overlay" course in business or finance. The requirement does not add to the existing number of courses required for undergraduate degrees; depending on which course is chosen, the course counts toward the student's general education or free electives requirement. See the Office of Student Affairs in the Bienen School of Music for course recommendations.

For all undergraduate degrees, students must also complete the Undergraduate Registration Requirement (p. 27) along with the degree requirements of their home school.

## Grading

Music majors must earn a grade of C or above in all courses required in the major, including all music core requirements and all specialization courses, in order to count those courses toward graduation requirements. A grade of D or above (including P grades for non-dual degree students) may be used to fulfill distribution requirements and electives. If a student receives a D in a major course, then takes that course a second time and receives a C grade or above, the initial D grade remains on the permanent record and cannot count toward elective requirements. The second (improved) grade does not replace the first, and the same course cannot be counted twice in the degree.

A maximum of six courses in non-music subjects taken under the P/N grade option may be counted toward the degree. Music students may not take music courses under the P/N grade option, except for those courses graded solely with P/N grades.

## Attendance Policy

Students are expected to attend all sessions of courses and ensembles for which they are registered. It is the responsibility of students enrolled in the Bienen School of Music to acquaint themselves and comply with the attendance policy of their departments, class instructors, and ensemble conductors. In addition, students who are absent from classes

for three or more consecutive days because of illness are required to notify the Bienen School's Office of Student Affairs.

Outside professional opportunities may arise for music students. If such an opportunity directly interferes in any way with curricular responsibilities, students must first obtain permission from the faculty of record for courses potentially affected, including classes, rehearsals, and performances, along with the signature of the program coordinator and a signature from one of the co-chairs of the Department of Music Performance. Noncompliance may be cause for failure in the courses or ensembles for which a student is registered during that quarter.

## Applied Music Study

Bachelor of Music degrees require four years of individual instruction for performance majors in piano, strings, voice, winds and percussion, jazz, and in composition. One year is required for academic majors in music cognition, musicology, and music theory; three years are required for music education. Concurrent registration in a major ensemble (<https://www.music.northwestern.edu/academics/ensembles/>) is required in each quarter of applied study, with the exception of piano majors and composition majors. Applied study must be with a faculty instructor in the program area to fulfill degree requirements.

## Applied Music Courses

Students in degree programs outside of music may have a limit on the number of applied music courses that are allowed to count toward those degrees. The list below specifies courses offered by the Bienen School that are considered to be applied music.

### Applied Music Courses

Course	Title
CONDUCT 364-0	Choral Organizations
CONDUCT 374-0	Band Organizations
CONDUCT 378-0	Contemporary Music Ensemble
CONDUCT 391-0	Chamber Music
CONDUCT 393-0	Orchestral Organizations
CONDUCT 395-0	Baroque Music Ensemble
GEN_MUS 115-0	Applied Piano (Advanced)
GEN_MUS 116-0	Applied Piano (Advanced)
GEN_MUS 120-0	Non-Major Strings
GEN_MUS 121-0	Non-Major Guitar Class-Beginning
GEN_MUS 125-0	Non-Major Winds/Percussion
GEN_MUS 130-0	Non-Major Jazz
GEN_MUS 160-0	Non-Major Private Voice-Beginning
GEN_MUS 260-0	Non-Major Private Voice-Intermediate
GEN_MUS 315-0	Non-Major Piano
GEN_MUS 316-0	Non-Major Piano - Graduate
GEN_MUS 360-0	Non-Major Private Voice-Advanced
GEN_MUS 364-0	Choral Organizations
GEN_MUS 374-0	Band Organizations
GEN_MUS 378-0	Contemporary Music Ensemble
GEN_MUS 393-0	Orchestral Organizations
GEN_MUS 395-0	Baroque Music Ensemble
JAZZ_ST 162-0	Applied Jazz for Music Majors
JAZZ_ST 262-0	Applied Jazz for Music Majors
JAZZ_ST 362-0	Applied Jazz for Music Majors
JAZZ_ST 377-0	Jazz Orchestra for Music Majors
JAZZ_ST 391-0	Small Ensemble

MUSIC_ED 230-0	Woodwind Class	WIND_PER 111-0	Applied Flute for Music Majors
MUSIC_ED 231-0	Guitar Class	WIND_PER 112-0	Applied Oboe for Music Majors
MUSIC_ED 234-0	Double Reeds Class	WIND_PER 113-0	Applied Clarinet for Music Majors
MUSIC_ED 235-0	High Brass Class	WIND_PER 114-0	Applied Saxophone for Music Majors
MUSIC_ED 236-0	Low Brass Class	WIND_PER 115-0	Applied Bassoon for Music Majors
MUSIC_ED 237-0	String Class I	WIND_PER 121-0	Applied Trumpet for Music Majors
MUSIC_ED 238-0	String Class II	WIND_PER 122-0	Applied French Horn for Music Majors
MUSIC_ED 239-0	Percussion Class	WIND_PER 123-0	Applied Euphonium for Music Majors
MUSIC_ED 240-0	Classroom Instruments	WIND_PER 124-0	Applied Trombone for Music Majors
MUS_COMP 112-0	Applied Composition for Music Majors	WIND_PER 125-0	Applied Tuba for Music Majors
MUS_COMP 212-0	Applied Composition for Music Majors	WIND_PER 131-0	Applied Percussion for Music Majors
MUS_COMP 312-0	Applied Composition for Music Majors	WIND_PER 211-0	Applied Flute for Music Majors
PIANO 161-0	Applied Piano for Music Majors	WIND_PER 212-0	Applied Oboe for Music Majors
PIANO 255-0	Piano Sight Reading	WIND_PER 213-0	Applied Clarinet for Music Majors
PIANO 261-0	Applied Piano for Music Majors	WIND_PER 214-0	Applied Saxophone for Music Majors
PIANO 328-1	Collaborative Piano-Beginning I	WIND_PER 215-0	Applied Bassoon for Music Majors
PIANO 328-2	Collaborative Piano-Beginning II	WIND_PER 221-0	Applied Trumpet for Music Majors
PIANO 328-3	Collaborative Piano-Beginning III	WIND_PER 222-0	Applied French Horn for Music Majors
PIANO 329-0	Duo Sonata Class	WIND_PER 223-0	Applied Euphonium for Music Majors
PIANO 358-0	Applied Keyboard for Music Majors	WIND_PER 224-0	Applied Trombone for Music Majors
PIANO 361-0	Applied Piano for Music Majors	WIND_PER 225-0	Applied Tuba for Music Majors
PIANO 392-0	Studio Ensemble for Music Majors	WIND_PER 231-0	Applied Percussion for Music Majors
STRINGS 141-0	Applied Violin for Music Majors	WIND_PER 311-0	Applied Flute for Music Majors
STRINGS 142-0	Applied Viola for Music Majors	WIND_PER 312-0	Applied Oboe for Music Majors
STRINGS 143-0	Applied Cello for Music Majors	WIND_PER 313-0	Applied Clarinet for Music Majors
STRINGS 144-0	Applied Double Bass for Music Majors	WIND_PER 314-0	Applied Saxophone for Music Majors
STRINGS 151-0	Applied Harp for Music Majors	WIND_PER 315-0	Applied Bassoon for Music Majors
STRINGS 171-0	Applied Guitar for Music Majors	WIND_PER 321-0	Applied Trumpet for Music Majors
STRINGS 241-0	Applied Violin for Music Majors	WIND_PER 322-0	Applied French Horn for Music Majors
STRINGS 242-0	Applied Viola for Music Majors	WIND_PER 323-0	Applied Euphonium for Music Majors
STRINGS 243-0	Applied Cello for Music Majors	WIND_PER 324-0	Applied Trombone for Music Majors
STRINGS 244-0	Applied Double Bass for Music Majors	WIND_PER 325-0	Applied Tuba for Music Majors
STRINGS 251-0	Applied Harp for Music Majors	WIND_PER 331-0	Applied Percussion for Music Majors
STRINGS 271-0	Applied Guitar for Music Majors	WIND_PER 360-0	Bass Clarinet
STRINGS 319-1	Orchestral Repertoire I (Violin,Viola,Cello,Dbl Bass,Harp)	WIND_PER 361-0	English Horn
STRINGS 319-2	Orchestral Repertoire II (Violin,Viola,Cello,Dbl Bass,Harp)	WIND_PER 362-0	Baroque Flute
STRINGS 319-3	Orchestral Repertoire III (Violin,Viola,Cello,Dbl Bass,Harp)	WIND_PER 392-0	Studio Ensemble for Music Majors
STRINGS 341-0	Applied Violin for Music Majors	WIND_PER 393-0	Repertoire Studies
STRINGS 342-0	Applied Viola for Music Majors		
STRINGS 343-0	Applied Cello for Music Majors		
STRINGS 344-0	Applied Double Bass for Music Majors		
STRINGS 351-0	Applied Harp for Music Majors		
STRINGS 371-0	Applied Guitar for Music Majors		
STRINGS 374-0	Guitar Ensemble for Music Majors		
STRINGS 392-0	Studio Ensemble for Music Majors		
VOICE 110-0	Applied Voice for Music Majors		
VOICE 210-0	Applied Voice for Music Majors		
VOICE 310-0	Applied Voice for Music Majors		
VOICE 351-1	Undergraduate Opera Workshop I		
VOICE 351-2	Undergraduate Opera Workshop II		
VOICE 351-3	Undergraduate Opera Workshop III		
VOICE 355-0	Vocal Coaching		
VOICE 363-0	Opera Performance		
VOICE 393-0	Repertoire Studies		

## Double Majors

Students may earn a double major in four years by fulfilling the requirements of both majors. Typically, the double major within the Bienen School of Music combines a specialization in a performance area with one in an academic area, although double majors in two academic areas are also possible. A double major in two performance areas is not permitted.

Four-year music students may also complete a second major outside the music school but may earn only one bachelor's degree. Second majors from the Weinberg College of Arts and Sciences are available to Bienen School of Music students without transferring into that school. Majors in the other four undergraduate schools at Northwestern may only be completed by students in that school; in these cases, interested music students may either pursue a dual degree with the second school, or transfer to the other school and complete the music major as a second major, in which case no degree from the Bienen School is awarded.

Students in other undergraduate schools may pursue music as a second major.

## Ad Hoc Majors

It is possible to design an ad hoc (self-designed) major that cuts across specializations to meet a particular student's needs and career ambitions. Bachelor of Music degree students may design an ad hoc major as a second major; 12 units are required beyond the core, and may not be double counted in the primary major. Bachelor of arts in music and bachelor of science in music degree students may pursue an ad hoc concentration within the degree; 10 units beyond the core are required for the concentration. Ad hoc programs are designed in consultation with faculty with expertise in the particular area of interest. Specializations have included areas such as arts administration, music criticism, and popular musicology.

## Dual Bachelor's Degree Programs

The Bienen School of Music offers dual bachelor's degree programs with the Weinberg College of Arts and Sciences (music and liberal arts), the School of Communication (music and communication), the School of Education and Social Policy (music and education and social policy), the McCormick School of Engineering and Applied Science (music and engineering), and the Medill School of Journalism, Media, Integrated Marketing Communications (music and journalism). For information on program requirements, see Dual Bachelor's Degrees (p. 38).

## Minor Programs

Music minors are offered in arts administration (p. 53), general music (p. 61), music cognition (p. 63), music composition (p. 55), music criticism (p. 64), music education (p. 60), musicology (p. 66), music technology (p. 55), and music theory (p. 64).

The minors in arts administration, music criticism, music education, and music theory are open to music majors only. The minor in general music is open only to non-music majors.

Minor programs include a minimum of 6 and a maximum of 9 courses, of which a minimum of 5 courses are not double-counted toward the major. Students must receive a grade of C or above in all courses counted toward the minor; P/N grades in courses used for minor requirements must be approved by the assistant dean. Students who wish to complete a minor program should fill out a Minor Declaration Form, available in the Office of Student Affairs, and should fill out a minor petition form one year before graduation. Students may pursue more than one Bienen School of Music minor.

Requirements for minors in general music (for non-majors), music cognition, music composition, music education, musicology, music technology, and music theory can be found on the corresponding program page. See below for requirements for minors in arts administration and music criticism.

### Minor in Arts Administration (6 units chosen from the list below, music majors only)

- ECON 201-0 Introduction to Macroeconomics
- ECON 202-0 Introduction to Microeconomics
- MUSIC 360-0 Career Innovation in Music and the Performing Arts
- MUSIC 398-0 Internship (no more than 2 units of MUSIC 398 may be used toward the 6 total units required)
- Any courses from BUS\_INST (Business Institutions), IMC (Integrated Marketing/Communication), or ENTREP (Entrepreneurship)

- Any courses in ORG\_BEH (Organizational Behavior), ACCOUNT (Accounting), MKTG (Marketing), or ADVT (Advertising) through the School of Professional Studies

### Minor in Music Criticism (6 units, music majors only)

- MUSICOL 399-0 Independent Study or MUSIC 398-0 Internship
- JOUR 201-1 Fundamentals of Reporting & Writing News
- JOUR 201-2 Fundamentals of Video Journalism
- JOUR 202-0 Journalism Values, Practice & Trends or JOUR 370-0 Media Law & Ethics
- JOUR 310-0 Media Presentation: Newspaper/Online or JOUR 311-0 Editing & Producing: Magazine or JOUR 312-0 Editing & Producing: Video
- One additional journalism elective

## Program Honors

Each year faculty are invited to nominate graduating students for program honors. To be eligible for program honors, students must have a cumulative GPA of 3.0 or above and be outstanding contributors to their respective programs. Additional criteria govern the selection of voice majors; see the coordinator of the voice and opera program for details. Faculty select only a small number of students in each program for program honors in a given year; for more information, contact the Office of Student Affairs in the Bienen School of Music.

## Composition and Music Technology

[music.northwestern.edu/academics/areas-of-study/composition](http://music.northwestern.edu/academics/areas-of-study/composition)

Composition students pursue a course of study that develops analytical and creative skills and enjoy several opportunities to hear their works performed. Students intending to major in composition may substitute composition class for applied studies during their first and second years.

Courses in music technology are offered primarily for music majors but are open to students from across the University as space permits.

## Programs of Study

- Composition Major (p. 54)
- Composition Minor (p. 55)
- Music Technology Minor (p. 55)

## Music Composition Courses

### MUS\_COMP 112-0 Applied Composition for Music Majors (1 Unit)

Original composition; individual instruction.

### MUS\_COMP 211-0 Class Composition (1 Unit)

Class instruction in techniques of composition. Open to music and non-music majors.

### MUS\_COMP 212-0 Applied Composition for Music Majors (1 Unit)

Original composition; individual instruction.

### MUS\_COMP 305-0 Optional Recital (0 Unit)

### MUS\_COMP 312-0 Applied Composition for Music Majors (1 Unit)

Original composition; individual instruction.

### MUS\_COMP 314-1 Instrumentation (1 Unit)

Instruments of the orchestra; scoring techniques; analysis of instrumental combinations.

Prerequisite: MUSIC 211-3 or consent of instructor.

### MUS\_COMP 314-2 Orchestration (1 Unit)

Stylistic scoring projects; analysis of orchestral and chamber scores.

Prerequisite: MUS\_COMP 314-1 or consent of instructor.

**MUS\_COMP 314-3 Advanced Orchestration (1 Unit)**

Contemporary scoring techniques; creative projects; analysis of orchestral and chamber scores.

Prerequisite: MUS\_COMP 314-2, graduate standing, or consent of instructor.

**MUS\_COMP 335-0 Selected Topics (1 Unit)** Topics vary; announced before registration. Writing projects; analysis of scores; contemporary stylistic techniques, performers, composers, and materials; in-class performances of original work. May be repeated for credit.

**MUS\_COMP 336-0 Contemporary Repertoire (1 Unit)**

**MUS\_COMP 337-0 Topics in Contemporary Repertoire (1 Unit)** Topics vary by quarter. Close study of specific recent compositional styles, which may include minimalism, complexity, music of the last decade, experimental music. Prerequisite: consent of instructor.

**MUS\_COMP 338-0 Composer Portraits (1 Unit)** Composers vary by quarter. Portrait studies of the work of a major composer or composers, e.g., Ferneyhough; Lutoslawski; Cage; Birtwistle and Maxwell Davies. Prerequisite: consent of instructor.

**MUS\_COMP 339-0 Compositional Concepts and Techniques (1 Unit)** Topics vary by quarter. Content, musical spaces, extended techniques, and spectralism. Prerequisite: consent of instructor.

**MUS\_COMP 340-0 Composition Workshop (1 Unit)**

Topics vary by quarter. Examples include Composer/Performer, Composing for Percussion, Composing for Dance, Composing for Solo Instrument.

Prerequisite: consent of instructor.

**MUS\_COMP 370-0 Junior Recital (0 Unit)**

**MUS\_COMP 380-0 Senior Recital (0 Unit)**

**MUS\_COMP 390-0 Composition Colloquium (0 Unit)** Discussion of contemporary compositional techniques.

**MUS\_COMP 399-0 Independent Study (0.5-1 Unit)**

## Music Technology Courses

**MUS\_TECH 300-0 Introduction to Music Technology (1 Unit)**

Introduction of key concepts in acoustics, digital audio theory, production, and postproduction. Through projects and presentations, students will learn to record and edit their work, use notation software, communicate with recording engineers, and prepare and present work online.

**MUS\_TECH 321-0 Producing in the Virtual Studio (1 Unit)**

Techniques for creating and producing music in the context of a computer-based audio production environment. Topics include MIDI, audio editing, plugins, effects processing, mastering, and basic surround mixing. Assignments include creative projects.

Prerequisite: MUS\_TECH 300-0 or equivalent experience and consent of instructor.

**MUS\_TECH 322-0 Recording Techniques (1 Unit)**

Microphone and placement techniques including stereo and close/distant miking of voices, acoustic instruments, and ensembles. Console design, signal flow, and dynamics processing. Projects include recording assignments.

Prerequisite: MUS\_TECH 300-0 or equivalent experience and consent of instructor.

**MUS\_TECH 335-0 Selected Topics (1 Unit)**

Topics vary; announced before registration. May be repeated with change of topic.

**MUS\_TECH 340-0 Composing With Computers (1 Unit)**

Foundational techniques of composition using music and audio software. Techniques of algorithmic composition, sound processing. Analysis of electroacoustic music. Assignments include student compositions.

Prerequisite: MUS\_TECH 300-0 or equivalent experience.

**MUS\_TECH 345-0 Technology-Based Performance (1 Unit)**

Creation, rehearsal, and performance of technology-based music in a group setting. Topics include real-time interaction, technological performance interfaces, application of algorithmic methods.

Prerequisite: consent of instructor.

**MUS\_TECH 350-0 Studio Techniques for Electroacoustic Music (1 Unit)**

Advanced projects in electroacoustic composition, audio programming (Max/MSP), audio engineering, or electronic instrument design; includes a largescale project, typically developed from the student's previous music technology course work.

Prerequisite: MUS\_TECH 340-0, MUS\_TECH 345-0, or equivalent experience.

**MUS\_TECH 355-2 History and Analysis of Electroacoustic Music (1 Unit)**

Survey of electronic music repertoire from 1948 through the end of the analog era and the introduction of digital music. Examination of the aesthetic motivations and technical approaches that have shaped electroacoustic music throughout its history, focusing on the interaction between technical innovation and creativity.

**MUS\_TECH 365-0 Electronic Film Music (1 Unit)**

The course will focus on electronic approaches to film scoring. It will consist of historical overview (going back to the 1940s), significant composers and repertoire examples, and practical exercises in scoring. The course will cover multiple film genres with special emphasis on science fiction, horror, and fantasy. Composers covered include John Carpenter, Vangelis, Jerry Goldsmith, Dave Porter, Hans Zimmer, and Hildur Guðnadóttir.

**MUS\_TECH 385-0 Senior Project (1 Unit)** Independent project in music technology. Prerequisite: permission of department.

**MUS\_TECH 399-0 Independent Study (0.5-1 Unit)**

## Composition Major

Bachelor of Music degrees in composition require a minimum of 48 units, and include core music requirements (15 units), major requirements (19 units), Foundational Disciplines (6 units), and elective requirements (8 units).

## Music Core Requirements (15 units)

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI

MUSIC 127-1 & MUSIC 127-2 & MUSIC 127-3	Keyboard Skills 1 and Keyboard Skills 2 and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	
Three quarters ensemble (1.5 units)	

## Composition Major Requirements (19 units)

Course	Title
MUS_COMP 112-0	Applied Composition for Music Majors (3 units)
MUS_COMP 212-0	Applied Composition for Music Majors (3 units)
MUS_COMP 312-0	Applied Composition for Music Majors (6 units)
MUS_COMP 314-1	Instrumentation (1 unit)
MUS_COMP 314-2	Orchestration (1 unit)
MUS_THRY 316-0	16th Century Counterpoint (1 unit)
Three elective courses in MUS_COMP or MUS_THRY	
One elective course in MUS_TECH	
MUS_COMP 380-0	Senior Recital (0 units)
MUS_COMP 390-0	Composition Colloquium (12 quarters, 0 units)

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (8 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (8 units, either music or non-music courses)	
Business/Finance Overlay course (may double count with any other requirement)	
Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.	

## Composition Minor

A minor in composition requires 6 units, of which a minimum of 5 courses are not double-counted toward the major.

Course	Title
MUS_COMP 211-0	Class Composition (three quarters)
MUS_COMP 314-1	Instrumentation
One elective course in MUS_COMP	
One elective course in MUS_TECH	

## Music Technology Minor

A minor in music technology requires 6 units, of which a minimum of 5 courses are not double-counted toward the major. The 6 units required for the minor include MUS\_TECH 300-0 Introduction to Music Technology. The five remaining classes are typically chosen from any additional 300-level courses in MUS\_TECH. Of those five, up to two audio-intensive courses from other departments (RTVF, SAI, COMP\_SCI, MUS COMP) may be counted with faculty approval. Music technology minors may be declared after the completion of MUS\_TECH 300-0 Introduction to Music Technology or with equivalent experience as determined by an interview with the program faculty. Music technology minors should be declared through the Bienen School's Office of Student Affairs by the end of the sophomore year.

## Conducting and Ensembles

[music.northwestern.edu/academics/ensembles](http://music.northwestern.edu/academics/ensembles)

Courses in the Conducting and Ensembles Program are available to all music majors. Non-music majors may be eligible for ensembles by audition and as space is available.

**CONDUCT 305-0 Optional Recital (0 Unit)** Non-degree recital.

**CONDUCT 323-0 Marching Band Techniques (0.5 Unit)** Writing for marching and pep bands; rehearsing for the marching band.

**CONDUCT 326-0 Foundations of Conducting (1 Unit)** Fundamentals in both instrumental and choral conducting; transpositions, ranges, and podium technique. Extensive laboratory experience with videotaped evaluation.

**CONDUCT 335-0 Selected Topics (1 Unit)** Topics relevant to the professional needs of conducting students.

**CONDUCT 340-1 Advanced Conducting Band (1 Unit)** Separate quarters of band, orchestral, and choral conducting that emphasize the techniques of score preparation and analysis, repertoire, and rehearsal methods. Prerequisite: CONDUCT 326-0 or equivalent. May be repeated for credit.

**CONDUCT 340-2 Advanced Conducting Choral (1 Unit)** Separate quarters of band, orchestral, and choral conducting that emphasize the techniques of score preparation and analysis, repertoire, and rehearsal methods. Prerequisite: CONDUCT 326-0 or equivalent. May be repeated for credit.

**CONDUCT 340-3 Advanced Conducting Orchestral (1 Unit)** Separate quarters of band, orchestral, and choral conducting that emphasize the techniques of score preparation and analysis, repertoire, and rehearsal methods. Prerequisite: CONDUCT 326-0 or equivalent. May be repeated for credit.

**CONDUCT 364-0 Choral Organizations (0.5 Unit)** University Chorale, University Singers, University Chorus, Alice Millar Chapel Choir, and Northwestern Camerata. Open to all qualified students.

**CONDUCT 374-0 Band Organizations (0.5 Unit)** Marching Band, Concert Band, Symphonic Band, Symphonic Wind Ensemble. Open to all qualified students.

**CONDUCT 378-0 Contemporary Music Ensemble (0.5 Unit)** Membership by audition.

**CONDUCT 391-0 Chamber Music (0.5 Unit)** Performance of chamber music literature in a variety of small-ensemble settings.

**CONDUCT 393-0 Orchestral Organizations (0.5 Unit)** Membership by audition in Symphony Orchestra, Chamber Orchestra, or Philharmonia.

**CONDUCT 395-0 Baroque Music Ensemble (0.5 Unit)** Performance of choral, solo, and instrumental music of the Middle Ages through the early baroque.

**CONDUCT 399-0 Independent Study (0.5-1 Unit)**

## Jazz

[music.northwestern.edu/academics/areas-of-study/jazz-studies.html](http://music.northwestern.edu/academics/areas-of-study/jazz-studies.html)

The jazz program offers courses in jazz improvisation, composition and arranging, history, and ensembles.

## Program of Study

- Jazz Studies Major (p. 56)

**JAZZ\_ST 162-0 Applied Jazz for Music Majors (1 Unit)**

**JAZZ\_ST 210-1 Jazz History I (1 Unit)** The origins of jazz, its performers, and their contributions. Includes a look at contemporaneous social conditions during its development.

**JAZZ\_ST 210-2 Jazz History II (1 Unit)** The origins of jazz, its performers, and their contributions. Includes a look at contemporaneous social conditions during its development.

**JAZZ\_ST 236-1 Jazz Improvisation I (0.5 Unit)** The language of jazz. Focus is on melodic development and ear training via repertoire and solos of jazz's most influential figures.

**JAZZ\_ST 236-2 Jazz Improvisation II (0.5 Unit)** The language of jazz. Focus is on melodic development and ear training via repertoire and solos of jazz's most influential figures.

**JAZZ\_ST 236-3 Jazz Improvisation III (0.5 Unit)** The language of jazz. Focus is on melodic development and ear training via repertoire and solos of jazz's most influential figures.

**JAZZ\_ST 262-0 Applied Jazz for Music Majors (1 Unit)**

**JAZZ\_ST 305-0 Optional Recital (0 Unit)**

**JAZZ\_ST 330-1 Jazz Composition and Arranging I (1 Unit)** The techniques of composing and arranging for large and small ensembles in the jazz tradition. Study of scores by major composers and arrangers from throughout jazz history.

**JAZZ\_ST 330-2 Jazz Composition and Arranging II (1 Unit)** The techniques of composing and arranging for large and small ensembles in the jazz tradition. Study of scores by major composers and arrangers from throughout jazz history.

**JAZZ\_ST 333-0 Jazz Theory (0.5 Unit)** Jazz theory.

**JAZZ\_ST 335-0 Selected Topics (1 Unit)** Topics vary. May be repeated for credit as topics change.

**JAZZ\_ST 336-1 Jazz Improvisation IV (0.5 Unit)** Continuation of JAZZ\_ST 236-3.

**JAZZ\_ST 336-2 Jazz Improvisation V (0.5 Unit)** Continuation of JAZZ\_ST 336-1.

**JAZZ\_ST 336-3 Jazz Improvisation VI (0.5 Unit)** Continuation of JAZZ\_ST 336-2.

**JAZZ\_ST 337-0 Business of Jazz (0.5 Unit)** A survey of the music industry as it pertains to jazz. Includes discussions on songwriting, music publishing, national and international copyright law, music licensing, artist management, music production, and related topics.

**JAZZ\_ST 361-1 Jazz Keyboard I (0.5 Unit)** Basic keyboard skills, with an emphasis on jazz voicing, harmonization, and analysis.

**JAZZ\_ST 361-2 Jazz Keyboard II (0.5 Unit)** Basic keyboard skills, with an emphasis on jazz voicing, harmonization, and analysis.

**JAZZ\_ST 362-0 Applied Jazz for Music Majors (1 Unit)**

**JAZZ\_ST 370-0 Junior Recital (0 Unit)**

**JAZZ\_ST 377-0 Jazz Orchestra for Music Majors (0.5 Unit)**

**JAZZ\_ST 380-0 Senior Recital (0 Unit)**

**JAZZ\_ST 391-0 Small Ensemble (0.5 Unit)**

**JAZZ\_ST 399-0 Independent Study (0.5-1 Unit)**

## Jazz Studies Major

Bachelor of Music degrees in jazz require a minimum of 48 units, and include core music requirements (10 units), major requirements (29.5 units), Foundational Disciplines (6 units), and elective requirements (2.5 units).

## Music Core Requirements (10 units)

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI
MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting

## Jazz Major Requirements (29.5 units)

Course	Title
JAZZ_ST 162-0	Applied Jazz for Music Majors (3 quarters)
JAZZ_ST 262-0	Applied Jazz for Music Majors (3 quarters)
JAZZ_ST 362-0	Applied Jazz for Music Majors (6 quarters)
JAZZ_ST 210-1 & JAZZ_ST 210-2	Jazz History I and Jazz History II
JAZZ_ST 236-1 & JAZZ_ST 236-2 & JAZZ_ST 236-3	Jazz Improvisation I and Jazz Improvisation II and Jazz Improvisation III
JAZZ_ST 336-1 & JAZZ_ST 336-2 & JAZZ_ST 336-3	Jazz Improvisation IV and Jazz Improvisation V and Jazz Improvisation VI
JAZZ_ST 330-1 & JAZZ_ST 330-2	Jazz Composition and Arranging I and Jazz Composition and Arranging II
JAZZ_ST 337-0	Business of Jazz
JAZZ_ST 361-1 & JAZZ_ST 361-2	Jazz Keyboard I and Jazz Keyboard II
JAZZ_ST 377-0	Jazz Orchestra for Music Majors (12 quarters)

JAZZ_ST 391-0	Small Ensemble (6 quarters)
JAZZ_ST 380-0	Senior Recital (0 units)

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (2.5 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (2.5 units, music or non-music)	
Business/Finance Overlay course (double counts with JAZZ_ST 337-0)	
Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.	

## Music Cognition

See Music Theory and Cognition (p. 62).

## Music Core

Courses listed under the category MUSIC include required core courses in music theory, aural skills, keyboard skills, and music history, as well as elective courses that are of school-wide interest, including alexander technique, career classes, student organized seminars and internship credit.

**MUSIC 111-1 Music Theory I (0.5 Unit)** Music as sound in time. Analytical studies in forms, media, textures, and harmonic and melodic materials.

**MUSIC 111-2 Music Theory II (0.5 Unit)** Music as sound in time. Analytical studies in forms, media, textures, and harmonic and melodic materials. Prerequisite: MUSIC 111-1.

**MUSIC 111-3 Music Theory III (0.5 Unit)** Music as sound in time. Analytical studies in forms, media, textures, and harmonic and melodic materials. Prerequisite: MUSIC 111-2.

**MUSIC 126-1 Aural Skills I (0.5 Unit)** Sight-singing and ear-training; drill in recognition of melodic, rhythmic, and harmonic patterns and aural analysis through listening and dictation. Progresses through six levels of proficiency.

**MUSIC 126-2 Aural Skills II (0.5 Unit)** Sight-singing and ear-training; drill in recognition of melodic, rhythmic, and harmonic patterns and aural analysis through listening and dictation. Progresses through six levels of proficiency.

**MUSIC 126-3 Aural Skills III (0.5 Unit)** Sight-singing and ear-training; drill in recognition of melodic, rhythmic, and harmonic patterns and aural analysis through listening and dictation. Progresses through six levels of proficiency.

**MUSIC 127-1 Keyboard Skills 1 (0.5 Unit)** This is the first quarter of a year-long sequence. This track is for beginning piano students. Topics

include repertoire, a healthful approach to piano technique, scales, keyboard harmony, ensemble, sight reading, and creative work.

**MUSIC 127-2 Keyboard Skills 2 (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 127-3 Keyboard Skills 3 (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 128-1 Keyboard Skills 1+ (0.5 Unit)** This is the first quarter of a year-long sequence. This track is for students with a little piano background, typically 1-2 years of previous study. Topics include repertoire, technique, scales, and keyboard harmony. Ensemble, sight reading, and creative work are covered as well.

**MUSIC 128-2 Keyboard Skills 2+ (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 128-3 Keyboard Skills 3+ (0.5 Unit)** Keyboard Skills 3+.

**MUSIC 129-1 Keyboard Skills 1-2-3 (0.5 Unit)** This course is for students with piano background. Topics include sight reading, keyboard theory, harmonizing melodies, solo repertoire, and ensemble.

**MUSIC 129-2 Keyboard Skills 4-5-6 (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 130-1 Keyboard Skills for Piano Majors (0.5 Unit)** This is the first quarter of a year-long sequence. Topics include vocal and string quartet score reading, keyboard theory, sight reading including 18th century examples, with corresponding harmonic language, rhythmic, and idiomatic patterns. Other topics include harmonizing melodies, creative work, and ensemble.

**MUSIC 130-2 Keyboard Skills for Piano Majors (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 130-3 Keyboard Skills for Piano Majors (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 211-1 Music Theory IV (0.5 Unit)** Music as sound in time. Analytical studies in forms, media, textures, and harmonic and melodic materials. Prerequisite: MUSIC 111-3 or consent of instructor.

**MUSIC 211-2 Music Theory V (0.5 Unit)** Music as sound in time. Analytical studies in forms, media, textures, and harmonic and melodic materials. Prerequisite: MUSIC 211-1.

**MUSIC 211-3 Music Theory VI (0.5 Unit)** Music as sound in time. Analytical studies in forms, media, textures, and harmonic and melodic materials. Prerequisite: MUSIC 211-2.

**MUSIC 214-0 The Classical Canon (1 Unit)** This course explores the idea of "classical music," a canon of works united not by scoring, age, nationality, or style, but rather by the perception of timeless value. What musical and social factors influenced inclusion or exclusion? This course seeks to both introduce a variety of extremely famous "classical" works and to interrogate the processes that made them famous.

**MUSIC 215-0 Performers and Performance (1 Unit)** This course focuses on what it means or meant to be a musician in different places and times. Students will gain introductory literacy in diverse modes of musical performance and learn to conceive of music history through the lens of performance rather than through composers and works, including reflection on how to locate themselves within a complex global music scene.

**MUSIC 216-0 Music in the Present (1 Unit)** This course explores contemporary musical practices through their circulation, reception, and mediation. Examples are drawn from Western art, popular, and global musical genres though we will explore how all these musics share-at least in part-a similar mode of distribution in the early twenty-

first century. Emphasis is placed on technology, listening practices, aesthetics, and contemporary musical institutions.

**MUSIC 226-1 Aural Skills IV (0.5 Unit)** Sight-singing and ear-training; drill in recognition of melodic, rhythmic, and harmonic patterns and aural analysis through listening and dictation. Progresses through six levels of proficiency.

**MUSIC 226-2 Aural Skills V (0.5 Unit)** Sight-singing and ear-training; drill in recognition of melodic, rhythmic, and harmonic patterns and aural analysis through listening and dictation. Progresses through six levels of proficiency.

**MUSIC 226-3 Aural Skills VI (0.5 Unit)** Sight-singing and ear-training; drill in recognition of melodic, rhythmic, and harmonic patterns and aural analysis through listening and dictation. Progresses through six levels of proficiency.

**MUSIC 227-1 Keyboard Skills 4 (0.5 Unit)** This is the first quarter of a second, year-long sequence required but not limited to Music Ed majors. Students who were placed in both Level 1 and the Level 1+ tracks will take this course. Topics include repertoire, technique, harmonizing melodies, sight reading, score reading, ensemble and creative work.

**MUSIC 227-2 Keyboard Skills 5 (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 227-3 Keyboard Skills 6 (0.5 Unit)** Class instruction in keyboard skills.

#### **MUSIC 298-0 Student Organized Seminar (0.5 Unit)**

#### **MUSIC 310-0 Biological Foundations of Speech and Music (1 Unit)**

Anatomy and physiology of the central auditory pathway, experience-related neural plasticity, right/left brain specialization, audiovisual integration, auditory learning and perception, and neural encoding of speech and music.

**MUSIC 327-1 Keyboard Skills 7 (0.5 Unit)** This is the first quarter of a year-long sequence required but not restricted to Choral Music Ed majors. Topics include vocal scores, sight reading, solo piano repertoire, and technique.

**MUSIC 327-2 Keyboard Skills 8 (0.5 Unit)** Class instruction in keyboard skills.

**MUSIC 327-3 Keyboard Skills 9 (0.5 Unit)** Class instruction in keyboard skills.

#### **MUSIC 330-0 Materials, Performance, Practice & Pedagogy (0.5 Unit)**

**MUSIC 335-0 Selected Topics (1 Unit)** Topics vary; announced before registration. May be repeated.

**MUSIC 350-0 Alexander Technique (0.5 Unit)** Methods of using the body efficiently to reduce unnecessary tension and stress in instrumental and vocal performance.

#### **MUSIC 360-0 Career Innovation in Music and the Performing Arts (1 Unit)**

Models of performing arts careers; innovative approaches to existing career paths. Case studies, guest speakers. Topics include fee and contract negotiation, artist and booking management, fundraising and grant writing, marketing and public relations, social media, and organizational and business structures. Open to music majors only.

**MUSIC 397-0 Summer Internship (0 Unit)** Field experience as an intern.

**MUSIC 398-0 Internship (0.5-4 Units)** Field experience as an intern. Requirements include journal and final paper.

**MUSIC 399-0 Independent Study (0.5-1 Unit)**

# **Music Education**

[music.northwestern.edu/academics/areas-of-study/music-education](http://music.northwestern.edu/academics/areas-of-study/music-education)

Graduates with a major in music education meet all requirements for teacher certification in the state of Illinois as well as most other states. Students take the professional program required of all music students, a structured sequence of courses in general education, a basic set of courses in music education, and special courses in the chosen music education specialization: instrumental, choral, or general education. All music education majors are required to complete 100 hours of clinical observation. The combination of coursework and hands-on practical experience results in a program that prepares professionals with a broad understanding of music and education as well as the skills to be effective music teachers.

## **Programs of Study**

- Music Education Major (p. 59)
- Music Education Minor (p. 60)

**MUSIC\_ED 230-0 Woodwind Class (0.5 Unit)**

**MUSIC\_ED 231-0 Guitar Class (0.5 Unit)**

**MUSIC\_ED 234-0 Double Reeds Class (0.5 Unit)**

**MUSIC\_ED 235-0 High Brass Class (0.5 Unit)**

**MUSIC\_ED 236-0 Low Brass Class (0.5 Unit)**

**MUSIC\_ED 237-0 String Class I (0.5 Unit)**

**MUSIC\_ED 238-0 String Class II (0.5 Unit)**

**MUSIC\_ED 239-0 Percussion Class (0.5 Unit)**

**MUSIC\_ED 240-0 Classroom Instruments (0.5 Unit)**

**MUSIC\_ED 260-0 Introduction to Music Education (1 Unit)** This course is designed as an introduction to the field of music education. It will provide an overview of the multifaceted nature of K-12 music teaching and learning and serve as a foundation for the construction of your own beliefs and practices as a teacher. We will observe music classrooms as well as read about and discuss a variety of current issues and exciting movements in music education.

**MUSIC\_ED 314-0 Practicum (0 Unit)** Practicum lab linked to MUSIC\_ED 361-0, MUSIC\_ED 362-0, MUSIC\_ED 364-0, MUSIC\_ED 365-0, MUSIC\_ED 366-0, and MUSIC\_ED 367-0.

**MUSIC\_ED 326-0 World Music Pedagogy (1 Unit)** This course is designed to explore the history, philosophy, and practical implementation of world music in music education settings. Develops in students a deeper understanding of the value of world music experiences in music education contexts and the ability to develop and implement world music activities in a variety of classroom settings.

**MUSIC\_ED 327-0 Teaching Exceptional Children (1 Unit)** Topics will include U.S. legislation relating to the education of individuals with disabilities, specific disabilities and their impact on student behavior and learning (behavioral disorders, cognitive, speech, and language disorders, autism spectrum disorders, hearing and visual impairments, physical disabilities, person-first language), Universal Design for Learning, and accommodations, adaptations, and differentiation for the music classroom. Students may engage virtually in weekly community field service at a local school for children with disabilities.

**MUSIC\_ED 335-0 Selected Topics (1 Unit)** Topics vary; announced before registration. May be repeated.

**MUSIC\_ED 345-0 Music in the Interdisciplinary Curriculum (1 Unit)**

Promoting music and arts-based interdisciplinary experiences for elementary and secondary school students. Curriculum developing interrelating arts disciplines (such as music, art, and literature) and connecting the arts with non-arts disciplines (such as history and social studies).

**MUSIC\_ED 358-0 Philosophy of Music Education (1 Unit)** The purpose of this course is to stimulate your thinking about your role as a music educator, and the role of music in the broader educative experience. Exploration of philosophical principles, concepts, and ideas that provide music education with purpose and direction. This class will help you articulate a vision for music in schools and a philosophical orientation toward music teaching and learning.

**MUSIC\_ED 361-0 Teaching General Music I (1 Unit)** For grades K-5, curriculum materials and strategies for developing musical growth. Laboratory experiences; developing creativity in the music classroom. Open only to music majors or with consent of instructor. Prerequisite: MUSIC\_ED 240-0.

**MUSIC\_ED 362-0 Teaching General Music II (1 Unit)** For grades 6-12, effective teaching of general music classes in middle and high school. Available curriculum materials; innovative approaches. Prerequisite: MUSIC\_ED 231-0.

**MUSIC\_ED 363-0 Teaching High School Nonperformance Courses (1 Unit)** Planning and teaching high school music, arts, humanities courses. Present practices; development of exemplary course plans.

**MUSIC\_ED 364-0 Teaching Instrumental Music I (1 Unit)** Teaching and administrative principles for elementary and middle school instrumental music programs. Rehearsal dynamics, conducting, rehearsal room management, and pedagogy for school ensembles. Prerequisite: MUSIC\_ED 237-0.

**MUSIC\_ED 365-0 Teaching Instrumental Music II (1 Unit)** Teaching and administrative principles for secondary school instrumental music programs. Rehearsal dynamics, conducting, rehearsal room management, and pedagogy for school ensembles. Prerequisite: MUSIC\_ED 364-0 .

**MUSIC\_ED 366-0 Teaching Choral Music I (1 Unit)** Development and application of skills, knowledge, and understandings for teaching choral music in elementary and middle school.

**MUSIC\_ED 367-0 Teaching Choral Music II (1 Unit)** Continuation of MUSIC\_ED 366-0. High school choral program, curriculum model, repertoire, sight-reading, rehearsal techniques, programming, administration.

**MUSIC\_ED 368-0 Teaching Composition in the Schools (1 Unit)** The purpose of this course is to study practical concepts and theories of teaching composition and improvisation in K-12 schools, learn about the design of curricular materials for teaching composition and improvisation, and compose and improvise using a variety of approaches and mediums that are applicable to general, choral, and instrumental music classrooms.

**MUSIC\_ED 369-0 Research and Evaluation in Music Education (1 Unit)** Procedures and issues in research and evaluation in music teaching. Practical application of research to decision making.

**MUSIC\_ED 370-0 Student Teaching in the Elementary School: General Music (1-4 Units)**

**MUSIC\_ED 371-0 Student Teaching in the Middle School/Junior High School: General/Choral (1-4 Units)**

**MUSIC\_ED 373-0 Student Teaching in the Senior High School: Choral and Nonperformance (1-4 Units)**

**MUSIC\_ED 375-0 Student Teaching in the Elementary School: Instrumental (1-4 Units)**

**MUSIC\_ED 376-0 Student Teaching in the Middle School/Junior High School: Instrumental (1-4 Units)**

**MUSIC\_ED 377-0 Student Teaching in the Senior High School: Instrumental and Nonperformance (1-4 Units)**

**MUSIC\_ED 380-0 Student Teaching in the Elementary School: General Music (1-4 Units)**

**MUSIC\_ED 381-0 Student Teaching in the Middle School/Junior High School: General/Choral (1-4 Units)**

**MUSIC\_ED 383-0 Student Teaching in the Senior High School: Choral and Nonperformance (1-4 Units)**

**MUSIC\_ED 385-0 Student Teaching in the Elementary School: Instrumental (1-4 Units)**

**MUSIC\_ED 386-0 Student Teaching in the Middle School/Junior High School: Instrumental (1-4 Units)**

**MUSIC\_ED 387-0 Student Teaching in the Senior High School: Instrumental and Nonperformance (1-4 Units)**

**MUSIC\_ED 390-0 Student Teaching Colloquium (0 Unit)**

**MUSIC\_ED 399-0 Independent Study (0.5-1 Unit)**

## Music Education Major

Bachelor of Music degrees in music education require a minimum of 48.5 to 51.5 units, and include core music requirements (13 units), major requirements (22 units), certification track requirements (9.5-12.5 units), distribution requirements (4 units), and non-registration requirements.

## Music Core Requirements (13 units)

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI
MUSIC 127-1 & MUSIC 127-2 & MUSIC 127-3	Keyboard Skills 1 and Keyboard Skills 2 and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 227-1 & MUSIC 227-2 & MUSIC 227-3	Keyboard Skills 4 and Keyboard Skills 5 and Keyboard Skills 6
MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting

## Music Education (22 units)

Course	Title
Applied lessons (9 quarters)	
MUSIC_ED 260-0	Introduction to Music Education
CONDUCT 340-1 or CONDUCT 340-2 or CONDUCT 340-3	Advanced Conducting Band Advanced Conducting Choral Advanced Conducting Orchestral
MUSIC_ED 361-0	Teaching General Music I
MUSIC_ED 364-0	Teaching Instrumental Music I
MUSIC_ED 366-0	Teaching Choral Music I
MUSIC_ED 314-0	Practicum (4 quarters)
MUSIC_ED 326-0	World Music Pedagogy
MUSIC_ED 327-0	Teaching Exceptional Children
MUSIC_ED 358-0	Philosophy of Music Education
SESP 201-0 or PSYCH 244-0	Human Development: Childhood and Adolescence Developmental Psychology
TEACH_ED 322-0	Linguistics Informed Approaches to Literacy
Student Teaching, selected from MUSIC_ED 370-387 (1 quarter, full time)	
MUSIC_ED 390-0	Student Teaching Colloquium

## Choral Track (12.5 units)

Course	Title
MUSIC 327-1 & MUSIC 327-2 & MUSIC 327-3	Keyboard Skills 7 and Keyboard Skills 8 and Keyboard Skills 9
VOICE 111-1 & VOICE 111-2 & VOICE 111-3	Phonetics and Diction I and Phonetics and Diction II and Phonetics and Diction III
VOICE 311-0	Vocal Solo Class (9 quarters)
CONDUCT 364-0	Choral Organizations (11 quarters)
One MUSIC_ED 200-level Instrumental Techniques Elective	
MUSIC_ED 237-0	String Class I
MUSIC_ED 231-0	Guitar Class
MUSIC_ED 240-0	Classroom Instruments
MUSIC_ED 362-0 or MUSIC_ED 368-0	Teaching General Music II Teaching Composition in the Schools
MUSIC_ED 367-0	Teaching Choral Music II

## General Track (9.5 units)

Course	Title
Major Ensemble (11 quarters)	
MUSIC_ED 200-level Instrumental Techniques elective (1 quarter)	
MUSIC_ED 231-0	Guitar Class
MUSIC_ED 237-0	String Class I
MUSIC_ED 240-0	Classroom Instruments
MUSIC_ED 362-0	Teaching General Music II
MUSIC_ED 365-0 or MUSIC_ED 367-0 or MUSIC_ED 368-0	Teaching Instrumental Music II Teaching Choral Music II Teaching Composition in the Schools

## Instrumental Track (11 units)

Course	Title
Major Ensemble (10 quarters)	
CONDUCT 391-0	Chamber Music
MUSIC_ED 230-0	Woodwind Class
MUSIC_ED 234-0	Double Reeds Class
MUSIC_ED 235-0 MUSIC_ED 236-0 MUSIC_ED 237-0 or CONDUCT 345-0 MUSIC_ED 239-0 MUSIC_ED 362-0 or MUSIC_ED 368-0 MUSIC_ED 365-0	High Brass Class Low Brass Class String Class I (2 quarters, 237 String Class I and 238 String Class II) or CONDUCT 345-0 Percussion Class Teaching General Music II Teaching Composition in the Schools Teaching Instrumental Music II

## Distribution Requirements (4 units)

Course	Title
Area I (Natural Sciences) (1 unit)	
Area III Social and Behavioral Sciences (1 unit)	
Area IV Historical Studies and/or Area V Ethics and Values (2 units)	

All distribution courses must be non-music.

## Non-Registration Requirements

Course	Title
By May 1 of sophomore year:	
Orientation CEF	
Petition for Advanced Standing	
By December 1 of junior year:	
Illinois Content Area Test #212 (PK-12 Music)	
Application for Student Teaching	
Intent to Complete Form	
By May 1 of junior year:	
Practicum CEF	
Senior Year:	
Teacher Performance Assessment (TPA) as required by the Illinois State Board of Education	
Completion of Health and Safety Module (Music Education CANVAS page)	
After Student Teaching:	
Two additional CEF Student Surveys	

## Music Education Minor

A minor in music education requires 6 units, of which a minimum of 5 courses are not double-counted toward the major. The minor in music education is open to music majors only.

Course	Title
MUSIC_ED 260-0	Introduction to Music Education
MUSIC_ED 358-0	Philosophy of Music Education
2 methods classes (2 units), chosen from:	
MUSIC_ED 361-0	Teaching General Music I
MUSIC_ED 362-0	Teaching General Music II
MUSIC_ED 364-0	Teaching Instrumental Music I
MUSIC_ED 365-0	Teaching Instrumental Music II
MUSIC_ED 366-0	Teaching Choral Music I
MUSIC_ED 367-0	Teaching Choral Music II
1 300-level music education elective (1 unit), chosen from:	
MUSIC_ED 345-0	Music in the Interdisciplinary Curriculum
MUSIC_ED 368-0	Teaching Composition in the Schools
other courses that may be offered	
One capstone project (1 unit)	

# Music Studies for Nonmajors

[music.northwestern.edu/academics/nonmajors](http://music.northwestern.edu/academics/nonmajors)

Students from all schools at Northwestern are encouraged to continue their development as instrumentalists or vocalists through ensemble participation, class instruction, or private study. Ensembles and music performance instruction require an audition. For more information, visit the Bienen School's Office of Student Affairs.

## Individual and Group Lessons for Non-Majors

Non-music majors may take individual music lessons for either 0 or 0.5 unit in voice, piano, strings, winds, brass, percussion, and jazz. Group lessons are offered in piano and guitar. See the list of GEN\_MUS courses for all available options. Students are accepted for lessons based on an audition and the availability of an instructor. An applied lesson fee is required for each registration and is billed to the student's account.

## Ensemble Participation

Non-music majors interested in auditioning for Bienen School ensembles should contact the ensemble director for audition information. If admitted, non-majors register under the following course numbers for 0 unit, or, non-majors may register under the corresponding ensemble under CONDUCT for 0.5 unit.

Course	Title
GEN_MUS 364-0	Choral Organizations
GEN_MUS 374-0	Band Organizations
GEN_MUS 393-0	Orchestral Organizations
GEN_MUS 395-0	Baroque Music Ensemble

## Minor Programs

Students outside the Bienen School have a variety of minor options from which to choose. The minor in general music is open only to non-music majors and is outlined below. Minors in music cognition (p. 63), music composition (p. 55), music technology (p. 55), and musicology (p. 66) are also open to non-music majors.

### Minor in General Music (6 units)

Course	Title
One course in Music Theory (GEN_MUS 252-0 or equivalent)	
One course in Music History chosen from GEN_MUS or MUSICOL	
Two music academic courses chosen from GEN_MUS, MUSICOL, MUS_TECH, MUS_COMP or MUSIC_ED	

Two units of music electives; may be academic or performance

**GEN\_MUS 101-6 First-Year Seminar (1 Unit)** WCAS First-Year Seminar

**GEN\_MUS 110-0 Class Piano (Beginner and Intermediate Levels) (0 Unit)** Group instruction in piano for non-music majors.

**GEN\_MUS 115-0 Applied Piano (Advanced) (0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 116-0 Applied Piano (Advanced) (0 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 120-0 Non-Major Strings (0-0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 121-0 Non-Major Guitar Class-Beginning (0.5 Unit)** Class instruction in classical guitar.

**GEN\_MUS 125-0 Non-Major Winds/Percussion (0-0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 130-0 Non-Major Jazz (0-0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 160-0 Non-Major Private Voice-Beginning (0-0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 170-0 Introduction to Music (1 Unit)** Key concepts and contexts for becoming an informed listener and critical thinker with respect to a broad range of musical styles and genres and for acquiring the skills and vocabulary to discuss and write about music effectively. Individual sections may vary from quarter to quarter; see specific section descriptions for more information. No previous musical training or ability to read music notation is required. (VI. Literature and fine arts) *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GEN\_MUS 175-0 Selected Topics in Music Literature for Non-Majors (1 Unit)** Topics vary; announced before registration. May be repeated. (VI. Literature and fine arts) *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GEN\_MUS 176-0 Selected Topics in Applied Music for Non-Majors (1 Unit)** Topics vary; announced before registration. May be repeated.

**GEN\_MUS 220-0 History of the Symphony (1 Unit)** Study of music for the symphony orchestra from the 17th century to the modern period. (VI. Literature and fine arts) *Literature Fine Arts Distro Area*

**GEN\_MUS 230-0 History of Opera (1 Unit)** History of opera from its origins in Italy at the end of the 16th century to the modern period. (VI. Literature and fine arts) *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GEN\_MUS 250-0 History of Rock (1 Unit)** The basic elements of rock from its roots in pop, country and western, and rhythm and blues to the present. (VI. Literature and fine arts) *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GEN\_MUS 252-0 Introduction to Music Theory I (1 Unit)** A basic course in music theory fundamentals, including harmonic materials and tonal structures. Analysis of harmonic structures; harmonization of melodies. (II. Formal studies) *Formal Studies Distro Area*

**GEN\_MUS 253-0 Introduction to Music Theory II (1 Unit)** For non-majors. Study of musical forms – such as binary form, invention, fugue, theme & variation, sonata, etc. – and their application to works primarily from the 18th and 19th centuries by composers including Bach, Mozart, and Schubert, among many others. Prerequisite: GEN\_MUS 252-0, or music-reading skills and some understanding of harmony. *Formal Studies Distro Area*

**GEN\_MUS 260-0 Non-Major Private Voice-Intermediate (0-0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 270-1 Western Musical Tradition (1 Unit)** Major genres and composers from 1600 to 1825. Primary emphasis on the generations of Bach and Handel, Haydn and Mozart, Beethoven and Schubert. Prerequisite: GEN\_MUS 170-0 or equivalent. (VI. Literature and fine arts). *Literature Fine Arts Distro Area*

**GEN\_MUS 270-2 Western Musical Tradition (1 Unit)** Major genres and composers from 1825 to the present. Prerequisite: GEN\_MUS 170-0 or equivalent. (VI. Literature and fine arts). *Literature Fine Arts Distro Area*

**GEN\_MUS 315-0 Non-Major Piano (0.5 Unit)** Piano lessons for non-major students. Fees apply, please contact the Bienen School of Music for more information.

**GEN\_MUS 335-0 Selected Topics for Non-Majors (1 Unit)** Topics vary; announced before registration. May be repeated.

**GEN\_MUS 360-0 Non-Major Private Voice-Advanced (0-0.5 Unit)** Private lessons for non-majors; audition required.

**GEN\_MUS 364-0 Choral Organizations (0 Unit)** Non-music majors interested in auditioning for Bienen School ensembles should contact the ensemble director for audition information. Register under GEN MUS for 0 unit, or under CONDUCT for 0.5 unit.

**GEN\_MUS 374-0 Band Organizations (0 Unit)** Non-music majors interested in auditioning for Bienen School ensembles should contact the ensemble director for audition information. Register under GEN MUS for 0 unit, or under CONDUCT for 0.5 unit.

**GEN\_MUS 378-0 Contemporary Music Ensemble (0 Unit)** Non-music majors interested in auditioning for Bienen School ensembles should contact the ensemble director for audition information. Register under GEN MUS for 0 unit, or under CONDUCT for 0.5 unit.

**GEN\_MUS 391-0 Small Ensembles (0 Unit)** Small ensembles.

**GEN\_MUS 393-0 Orchestral Organizations (0 Unit)** Non-music majors interested in auditioning for Bienen School ensembles should contact the ensemble director for audition information. Register under GEN MUS for 0 unit, or under CONDUCT for 0.5 unit.

**GEN\_MUS 395-0 Baroque Music Ensemble (0 Unit)** Non-music majors interested in auditioning for Bienen School ensembles should contact the ensemble director for audition information. Register under GEN MUS for 0 unit, or under CONDUCT for 0.5 unit.

## Music Technology

See Composition and Music Technology (p. 53).

## Music Theory and Cognition

[music.northwestern.edu/academics/areas-of-study/music-theory-and-cognition](http://music.northwestern.edu/academics/areas-of-study/music-theory-and-cognition)

Undergraduates majoring in theory or cognition receive a broad education in music analysis and the cognitive sciences. The emphasis is on cognitive musicology, whereby music is studied using the tools and insights of cognitive science and musical research.

## Programs of Study

- Music Cognition Major (p. 63)
- Music Cognition Minor (p. 63)
- Music Theory Major (p. 64)
- Music Theory Minor (p. 64)

## Music Theory Courses

**MUS\_THRY 251-0 Intro to Music Cognition (1 Unit)** An introduction to music cognition for music undergraduates as well as students with limited music backgrounds. Readings primarily from secondary sources, with some primary sources as well.

### MUS\_THRY 313-0 Analytical Approaches to World Musics (1 Unit)

This class explores aspects of musical rhythm, meter, pitch, harmony, and structure through a comparative lens. It is centered around transcription, beginning with theories of the role of transcription for the researcher, and uses active listening as a way of cultivating an awareness of musical behavior of some of the many musics of the world.

### MUS\_THRY 316-0 16th Century Counterpoint (1 Unit)

Contrapuntal textures from two to four voices. Cadence and form, melodic line and motive, rhythm, simple and complex imitation, and treatment of dissonance in the sacred music of Lassus, Josquin, and Palestrina.

### MUS\_THRY 317-0 Historical Improvisation (1 Unit)

The study of harmony at the keyboard as learned by musicians since the early 17th century. Figured bass is an essential subject for performers of early music (including Bach and Mozart) and a key to the analysis of most pre-20th century European music.

### MUS\_THRY 318-0 18th Century Counterpoint (1 Unit)

Baroque dance suite, chorale prelude, invention, fugue, chiefly involving the music of J. S. Bach. Melodic, harmonic, structural characteristics; contrapuntal techniques.

### MUS\_THRY 321-0 Classical Form (1 Unit)

An examination of phrase-construction and punctuation in the musical forms of the late eighteenth and early nineteenth centuries. The focus will typically be on Haydn, Mozart, and Beethoven's skillful use of conventional formal structures to engage creatively with listeners' expectations.

### MUS\_THRY 322-1 Rhythm and Meter I (1 Unit)

Close reading and discussion of key canonical texts from the last three decades' rich scholarship in rhythm and meter as well as innovative new work. Each student completes a substantial analytical and/or theoretical paper.

**MUS\_THRY 322-2 Rhythm and Meter II (1 Unit)** Among the most remarkable developments in the music theory of recent decades have been the rapid advances in the study of rhythm and meter. This course combines close readings of canonical texts and innovative work in this field with analysis of rhythm and meter in common-practice repertoire.

### MUS\_THRY 325-0 Style and Phrase (1 Unit)

An investigation of the musical phrase in the long 18th century (1680–1830) from the perspective of schema theory. A schema is a typically short, memorable pattern defined by a characteristic pairing of scale degree progressions in the melody and bass, and an accompanying harmonic progression. Such schemata are the essential building blocks of composition in the long 18th century.

### MUS\_THRY 331-0 Analytical Studies (1 Unit)

Extension and refinement of concepts and techniques acquired in first and second year music theory.

### MUS\_THRY 333-0 Analysis of Popular Music (1 Unit)

Course objectives are (1) developing skill in analyzing popular music and (2) exploring how music scholars have studied traits such as form, harmony, timbre, etc. in a variety of popular repertoires. Students will become familiar with recurring issues in the interpretation of popular music and develop the ability to form their own critical interpretations using music analysis as a tool.

### MUS\_THRY 335-0 Selected Topics in Music Theory (1 Unit)

Topics vary; announced before registration. May be repeated.

### MUS\_THRY 336-0 Selected Topics in Music Cognition (1 Unit)

Topics vary; announced before registration. May be repeated.

### MUS\_THRY 340-0 Analysis of Recorded Performance (1 Unit)

This class provides an overview of the recent literature in music theory and cognition, focusing on articles published in the main journals of these fields. Students will engage with the current themes in the literature, while also situating these readings within a broader historical context in the field.

**MUS\_THRY 341-0 Sound to Structure (1 Unit)**

Music theory privileges the parameters of pitch (as melody, harmony, and counterpoint) and rhythm (as surface rhythm and meter), but music as experienced is much more than the sum of these. This class engages how musical experience arises from and is shaped by other parameters, notably timbre, register, texture, and dynamics, across musical styles and periods.

**MUS\_THRY 345-0 Experimental and Empirical Methods in Music Theory (1 Unit)**

Empirical methods in music research have been used to study aspects of musical style, performance practice, authorship, musical behaviors and auditory perception, among other topics. This course provides a foundation and overview of empirical methods used in musicological and music-theoretic research, and equips students with the tools needed to critically engage with the literature in the field while designing their own empirically-based music research.

**MUS\_THRY 348-0 Corpus Studies (1 Unit)**

Corpus studies, or distant readings of multiple musical works, are often employed as a way of better understanding issues such as the relationships between pieces, authorship, trends over time, or differences and similarities between genres. In this class, we will explore the techniques, history, and philosophy of such approaches, and will construct and analyze our own corpora. For the most part, this class will deal with notated scores, and students will be encouraged to ask their own research questions of the music that they are most interested in.

**MUS\_THRY 355-0 Analysis of Post-Tonal Music (1 Unit)**

Techniques for analysis of atonal and nonfunctional tonal music, including serial, set-theoretic, and parametric approaches. Emphasis on music of Schoenberg, Webern, Berg, Stravinsky, and Debussy. Selected readings in analytic literature.

Prerequisite: MUSIC 211-3 or equivalent.

**MUS\_THRY 385-0 Senior Project (1 Unit)**

**MUS\_THRY 390-0 Music Theory Colloquium (0 Unit)** Special topics presentations for music theory students.

**MUS\_THRY 399-0 Independent Study (0.5-1 Unit)**

## Music Cognition Major

Bachelor of Music degrees in music cognition require a minimum of 48 units, and include core music requirements (18 units), major requirements (15-16 units), and Foundational Disciplines (6 units) and elective requirements (8-9 units).

## Music Core Requirements (18 units)

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI

MUSIC 127-1 & MUSIC 127-2 & MUSIC 127-3	Keyboard Skills 1 and Keyboard Skills 2 and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	
Three quarters applied lessons (3 units)	
Three quarters ensemble (1.5 units)	

## Music Cognition Major Requirements (15-16 units)

Course	Title
MUS_THRY 251-0	Intro to Music Cognition (1 unit)
MUS_THRY 336-0	Selected Topics in Music Cognition (2 units)
PSYCH 201-0	Statistical Methods in Psychology (1 unit)
PSYCH 205-0	Research Methods in Psychology (1 unit)
Cognate areas (3 units)	
Music Studies electives (4 units)	
Applied lessons/performance experience (3 units)	
MUS_THRY 385-0	Senior Project (1 unit, optional)

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (8-9 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (8 units if completing Senior Project or 9 units; music or non-music courses)	
Business/Finance Overlay course (may double count with any other requirement)	
Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.	

## Music Cognition Minor

A minor in music cognition requires 9 units, of which a minimum of 5 courses are not double counted toward the major.

- 3 units in music cognition: MUS\_THRY 251-0 Intro to Music Cognition (1 unit) and MUS\_THRY 336-0 Selected Topics in Music Cognition (2 units)
- 3 units in music analysis and music technology chosen from MUS\_THRY and MUS\_TECH
- 3 units in cognate areas (such as psychology, linguistics, and communication sciences and disorders)

## Music Theory Major

Bachelor of Music degrees in music theory require a minimum of 48 units, and include core music requirements (18 units), major requirements (15-17 units), Foundational Disciplines (6 units), and elective requirements (7-9 units).

### Music Core Requirements (18 units)

Course	Title
MUSIC 111-1	Music Theory I
& MUSIC 111-2	and Music Theory II
& MUSIC 111-3	and Music Theory III
MUSIC 211-1	Music Theory IV
& MUSIC 211-2	and Music Theory V
& MUSIC 211-3	and Music Theory VI
MUSIC 126-1	Aural Skills I
& MUSIC 126-2	and Aural Skills II
& MUSIC 126-3	and Aural Skills III
MUSIC 226-1	Aural Skills IV
& MUSIC 226-2	and Aural Skills V
& MUSIC 226-3	and Aural Skills VI
MUSIC 127-1	Keyboard Skills 1
& MUSIC 127-2	and Keyboard Skills 2
& MUSIC 127-3	and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 214-0	The Classical Canon
& MUSIC 215-0	and Performers and Performance
& MUSIC 216-0	and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	
Three quarters applied lessons (3 units)	
Three quarters ensemble (1.5 units)	

### Music Theory Major Requirements (15-17 units)

Course	Title
Six elective courses in MUS_THRY (6 units)	
Two elective courses in MUSICOL (2 units)	
One elective course in MUS_TECH (1 unit)	
Cognate areas (3 units)	
Applied lessons/performance experience (3 units)	
Senior project (optional): MUS_THRY 399-0 Independent Study (1 unit) and MUS_THRY 385-0 Senior Project (1 unit)	

### Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (7-9 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	

Electives (7 units if completing Senior Project or 9 units; music or non-music courses)

Business/Finance Overlay course (may double count with any other requirement)

Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.

## Music Theory Minor

A minor in music theory requires 6 units, of which a minimum of 5 courses are not double counted toward the major. The minor in music theory is open to music majors only. All available courses are listed under MUS\_THRY.

- Three 300-level music theory courses in music analysis
- Three 300-level courses in music cognition

## Musicology

[music.northwestern.edu/academics/areas-of-study/musicology](http://music.northwestern.edu/academics/areas-of-study/musicology)

Encompassing much more than music history, the musicology major approaches music as a social activity shaped by aesthetic movements and intellectual theories – in essence, the humanistic study of music in culture.

### Programs of Study

- Musicology Major (p. 65)
- Musicology Minor (p. 66)

#### MUSICOL 313-0 World Music Cultures (1 Unit)

Introduction to both the world's musical variety and common issues related to music cultures worldwide.

#### MUSICOL 323-0 Topics in Ethnomusicology (1 Unit)

Ethnomusicology history, bibliographical resources, methods, and theories.

*Literature Fine Arts Distro Area*

#### MUSICOL 326-0 Topics in World Music: Asia (1 Unit)

The musical traditions of South Asia, East Asia, and Southeast Asia. Topics include characteristics of instruments and instrumental ensembles, sound structures, theatrical traditions, and vocal performance.

#### MUSICOL 329-0 Topics in Middle Eastern Music (1 Unit)

History, basic tenets, and aesthetic of Islam; the musics of Islamic cultures from North Africa, Spain, the Middle East, central Asia, and the Indian subcontinent. Methods of contextualizing musical cultures and critical methodology related to gender, postcolonial theory, and religion.

*Literature Fine Arts Distro Area*

#### MUSICOL 330-0 Russian Fairy Tale Opera (1 Unit)

Russian cultural and national identity studied through folk tales and their musical counterparts in Russian opera. Current critical theory, the portrayal of women, the interplay of nationalism and gender, and the East-West dichotomy.

*Literature Fine Arts Distro Area*

#### MUSICOL 331-0 Orientalism and Music (1 Unit)

The imagery of the East in the music of the West expressed in musical genres of various historical periods; focus on romantic opera and contemporary musical culture. Orientalism as formulated by Edward

Said, developed by John MacKenzie, and clarified through references in literature and the visual arts.

*Literature Fine Arts Distro Area*

#### **MUSICOL 332-0 Music and Gypsies (1 Unit)**

Romany music from Hungary, Spain, the Balkans, Turkey, the Middle East, and India; Andalucian flamenco; 19th century opera and operetta (Bizet's Carmen, Verdi's La Traviata); instrumental works by Haydn, Liszt, Brahms, and others; and more recent "world" music phenomena.

#### **MUSICOL 333-0 Topics in Popular Music (1 Unit)**

Topics vary; announced before registration. May be repeated.

#### **MUSICOL 334-0 Russian Modernism (1 Unit)**

Russian music after Tchaikovsky, notably Scriabin, Rachmaninoff, Stravinsky, Prokofiev, and Shostakovich.

#### **MUSICOL 335-0 Selected Topics (1 Unit)**

Topics vary; announced before registration. May be repeated.

*Literature Fine Arts Distro Area*

**MUSICOL 335-SA Selected Topics (1 Unit)** Topics vary; announced before registration. May be repeated. *Literature Fine Arts Distro Area*

#### **MUSICOL 338-0 Expressionism (1 Unit)**

The interaction of music (Schoenberg, Berg, Webern, Weill, Hindemith, et al.) with painting (Kandinsky et al.), poetry (Stefan George et al.), theater (Wedekind, Brecht, et al.), and dance (Kurt Jooss et al.) in early-20th century Germany and Austria.

#### **MUSICOL 339-0 Music and Gender (1 Unit)**

The many intersections between music and ideas of gender; focus on composition, characterization, patronage, and performance. Elite and popular Western musical forms from the Middle Ages to 2000 in relation to gender issues in other cultures' musics.

*Literature Fine Arts Distro Area*

#### **MUSICOL 341-0 Music and the Visual Arts (1 Unit)**

The many ways in which the senses of sight and hearing interact in Western images of music and music making as well as in select musical works inspired by concurrent ideas or movements in the visual arts.

#### **MUSICOL 342-0 Authenticity (1 Unit)**

Authenticity in music at the turn of the 21st century, focusing on three music genres most closely associated with that idea's cultural and philosophical considerations: early music, country music, and world or ethnic music.

*Literature Fine Arts Distro Area*

#### **MUSICOL 343-0 Music and Shakespeare (1 Unit)**

An exploration of some of the many intersections between Shakespearean drama and music from the late 16th through early 21st centuries, including study of plays, opera, ballet, film, musical theater, art song, popular music, and the symphony.

#### **MUSICOL 344-0 Music and Film (1 Unit)**

Theory and practice of music as a part of the processes of making and viewing films, from the beginning of the sound era to the present. Topic varies but typically focuses on a specific film genre's musical traditions, techniques, personalities, and problems.

#### **MUSICOL 345-0 From Literature to Opera to Film (1 Unit)**

Selected operas, based on literary or theatrical works, that in turn inspired films. Examination of the literary or theatrical inspiration, the opera as written for stage, and film and video adaptations.

#### **MUSICOL 346-0 Composer Topics (1 Unit)**

Topics vary; announced before registration. May be repeated.

#### **MUSICOL 347-0 The Lied (1 Unit)**

Survey of voice-piano settings of German poems, from Mozart through Richard Strauss.

#### **MUSICOL 348-0 Bel Canto Opera (1 Unit)**

Italian opera in the early-to-mid-19th century. The relations of Rossini, Donizetti, and Bellini to the operatic culture of their time.

#### **MUSICOL 350-0 Topics in Medieval Music (1 Unit)**

Gregorian and medieval chant, secular monophony, and the development of polyphony from the earliest records through the music of Ockeghem and Busnois.

*Literature Fine Arts Distro Area*

#### **MUSICOL 351-0 Topics in 16th Century Music (1 Unit)**

Middle and late renaissance and early manifestations of the baroque, from Josquin through the Gabrieli.

*Literature Fine Arts Distro Area*

#### **MUSICOL 352-0 Topics in 17th Century Music (1 Unit)**

The baroque from Monteverdi through Bach and Handel.

#### **MUSICOL 353-0 Topics in 18th Century Music (1 Unit)**

Representative works and critical studies of European art music from the Arcadian reform of opera through the Napoleonic era.

#### **MUSICOL 354-0 Topics in 19th Century Music (1 Unit)**

Representative works and critical studies of European art music from the Congress of Vienna to the death of Mahler.

#### **MUSICOL 355-0 Topics in 20th Century Music (1 Unit)**

Representative works and critical studies of art music from Debussy to the late 20th century.

#### **MUSICOL 356-0 Topics in Contemporary Music (1 Unit)**

Representative works and critical studies of art music from 2000 to the present.

#### **MUSICOL 385-0 Senior Project (1 Unit)**

#### **MUSICOL 390-0 Musicology Colloquium (0 Unit)**

#### **MUSICOL 399-0 Independent Study (0.5-1 Unit)**

## **Musicology Major**

Bachelor of Music degrees in musicology require a minimum of 48 units, and include core music requirements (18 units), major requirements (16 units), Foundational Disciplines (6 units), and elective requirements (8 units).

## **Core Music Requirements (18 units)**

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI
MUSIC 127-1 & MUSIC 127-2 & MUSIC 127-3	Keyboard Skills 1 and Keyboard Skills 2 and Keyboard Skills 3 (or higher course number based on placement)

MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0 CONDUCT 326-0 One MUSICOL elective	The Classical Canon and Performers and Performance and Music in the Present Foundations of Conducting
One 20th/21st century Music Studies elective	
Three quarters applied lessons (3 units)	
Three quarters ensemble (1.5 units)	

## Musicology Major Requirements (16 units)

### Historical Musicology Track

Course	Title
History of Music Courses (6 units)	
MUSICOL 350-0	Topics in Medieval Music
MUSICOL 351-0	Topics in 16th Century Music
MUSICOL 352-0	Topics in 17th Century Music
MUSICOL 353-0	Topics in 18th Century Music
MUSICOL 354-0	Topics in 19th Century Music
MUSICOL 355-0	Topics in 20th Century Music
Musicology electives or cognates (6 units)	
Applied lessons/performance experience (3 units)	
MUSICOL 385-0	Senior Project (1 unit)
MUSICOL 390-0	Musicology Colloquium (12 quarters, 0 units)

### Ethnomusicology Track

Course	Title
Ethnomusicology courses (3 units)	
Area and topics courses (9 units)	
Applied lessons/performance experience (3 units)	
MUSICOL 385-0	Senior Project (1 unit)
MUSICOL 390-0	Musicology Colloquium (12 quarters, 0 units)

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (8 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (8 units, music or non-music courses)	
Business/Finance Overlay course (may double count with any other requirement)	
Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.	

## Musicology Minor

A minor in musicology requires 6 units, of which a minimum of 5 courses are not double counted toward the major. The minor in musicology is open to all undergraduates.

Course	Title
One course on Music of the World's Cultures chosen from:	
MUSICOL 313-0	World Music Cultures
MUSICOL 323-0	Topics in Ethnomusicology
MUSICOL 326-0	Topics in World Music: Asia
MUSICOL 327-0	
MUSICOL 328-0	
MUSICOL 329-0	Topics in Middle Eastern Music
One course on Historical Art Music chosen from:	
MUSICOL 350-0	Topics in Medieval Music
MUSICOL 351-0	Topics in 16th Century Music
MUSICOL 352-0	Topics in 17th Century Music
MUSICOL 353-0	Topics in 18th Century Music
MUSICOL 354-0	Topics in 19th Century Music
MUSICOL 355-0	Topics in 20th Century Music

Four remaining courses may be chosen from any courses in MUSICOL.

## Piano

[music.northwestern.edu/academics/areas-of-study/piano](http://music.northwestern.edu/academics/areas-of-study/piano)

The major in piano performance focuses on private lessons, studio classes, piano repertoire, piano pedagogy, and accompanying classes. Frequent performances as a soloist and as an assisting musician develop skills in public presentation. Solo recitals, required in both the junior and senior years, are considered an integral part of the program.

### Program of Study

- Piano Major (p. 67)

**PIANO 102-0 Technique Class - First Year (0 Unit)** Introductory piano techniques for first year piano performance majors.

**PIANO 161-0 Applied Piano for Music Majors (1 Unit)**

**PIANO 202-0 Technique Class - Second Year (0 Unit)** Intermediate piano techniques for second year piano performance majors.

**PIANO 255-0 Piano Sight Reading (0 Unit)**

**PIANO 261-0 Applied Piano for Music Majors (1 Unit)**

**PIANO 305-0 Optional Recital (0 Unit)**

**PIANO 313-1 Piano Repertoire I (1 Unit)** Analytical and historical study of piano solo and concerto repertoire from early keyboard literature to the present.

**PIANO 313-2 Piano Repertoire II (1 Unit)** Analytical and historical study of piano solo and concerto repertoire from early keyboard literature to the present.

**PIANO 313-3 Piano Repertoire III (1 Unit)** Analytical and historical study of piano solo and concerto repertoire from early keyboard literature to the present.

**PIANO 315-1 Piano Pedagogy I (0.5 Unit)** Lecture/demonstration/laboratory course in piano teaching at all levels. Principles and techniques of group and individual instruction; survey of teaching materials. Seniors and graduate students.

**PIANO 315-2 Piano Pedagogy II (0.5 Unit)** Lecture/demonstration/laboratory course in piano teaching at all levels. Principles and techniques of group and individual instruction; survey of teaching materials. Seniors and graduate students.

**PIANO 315-3 Piano Pedagogy III (0.5 Unit)** Lecture/demonstration/laboratory course in piano teaching at all levels. Principles and techniques of group and individual instruction; survey of teaching materials. Seniors and graduate students.

**PIANO 328-1 Collaborative Piano-Beginning I (0.5 Unit)** Piano students work with a singer and instrumentalist in the preparation and performance of mainstream recital repertoire.

**PIANO 328-2 Collaborative Piano-Beginning II (0.5 Unit)** Piano students work with a singer and instrumentalist in the preparation and performance of mainstream recital repertoire.

**PIANO 328-3 Collaborative Piano-Beginning III (0.5 Unit)** Piano students work with a singer and instrumentalist in the preparation and performance of mainstream recital repertoire.

**PIANO 329-0 Duo Sonata Class (0.5 Unit)** Provides an opportunity for pianists and their vocal and/or instrumental partners to receive intensive coaching on works of their choice. A final performance is required.

**PIANO 335-0 Selected Topics (1 Unit)** Topics vary; announced before registration. May be repeated.

**PIANO 340-0 Piano Forum (0 Unit)**

**PIANO 358-0 Applied Keyboard for Music Majors (0.5 Unit)**

**PIANO 361-0 Applied Piano for Music Majors (1 Unit)**

**PIANO 370-0 Junior Recital (0 Unit)**

**PIANO 380-0 Senior Recital (0 Unit)**

**PIANO 390-0 Studio Class (0 Unit)**

**PIANO 392-0 Studio Ensemble for Music Majors (0.5 Unit)**

**PIANO 393-0 Repertoire Studies (0.5 Unit)** Topics vary by quarter.

**PIANO 399-0 Independent Study (0.5-1 Unit)**

## Piano Major

Bachelor of Music degrees in piano require a minimum of 48 units, and include core music requirements (15 units), major requirements (18.5 units), Foundational Disciplines (6 units), and elective requirements (8.5 units).

## Core Music Requirements (15 units)

Course	Title
MUSIC 111-1	Music Theory I
& MUSIC 111-2	and Music Theory II
& MUSIC 111-3	and Music Theory III
MUSIC 211-1	Music Theory IV
& MUSIC 211-2	and Music Theory V
& MUSIC 211-3	and Music Theory VI
MUSIC 126-1	Aural Skills I
& MUSIC 126-2	and Aural Skills II
& MUSIC 126-3	and Aural Skills III
MUSIC 226-1	Aural Skills IV
& MUSIC 226-2	and Aural Skills V
& MUSIC 226-3	and Aural Skills VI
MUSIC 130-1	Keyboard Skills for Piano Majors
& MUSIC 130-2	and Keyboard Skills for Piano Majors
& MUSIC 130-3	and Keyboard Skills for Piano Majors

MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	
Three quarters ensemble (1.5 units)	

## Piano Major Requirements (18.5 units)

Course	Title
PIANO 161-0	Applied Piano for Music Majors (3 quarters)
PIANO 102-0	Technique Class - First Year (Two quarters, fall and spring)
PIANO 261-0	Applied Piano for Music Majors (3 quarters)
PIANO 202-0	Technique Class - Second Year (Two quarters, fall and spring)
PIANO 361-0	Applied Piano for Music Majors (6 quarters)
PIANO 313-1 & PIANO 313-2 & PIANO 313-3	Piano Repertoire I and Piano Repertoire II and Piano Repertoire III
PIANO 315-1 & PIANO 315-2 & PIANO 315-3	Piano Pedagogy I and Piano Pedagogy II and Piano Pedagogy III
PIANO 328-1 & PIANO 328-2 & PIANO 328-3	Collaborative Piano-Beginning I and Collaborative Piano-Beginning II and Collaborative Piano-Beginning III
CONDUCT 391-0	Chamber Music
PIANO 340-0	Piano Forum (12 quarters)
PIANO 370-0	Junior Recital
PIANO 380-0	Senior Recital

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (8.5 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (8.5 units, music or non-music courses)	
Business/Finance Overlay course (may double count with any other requirement)	
Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.	

## String Instruments

[music.northwestern.edu/academics/areas-of-study/strings](http://music.northwestern.edu/academics/areas-of-study/strings)

Majors in string instruments prepare for professional performance and teaching as well as for advanced study. The curriculum is built around individual study and ensemble participation, including chamber music and orchestra, with orchestral repertoire studies and string pedagogy available to qualified juniors and seniors. A junior recital and a senior

recital are required. Students in this program may major in violin, viola, cello, double bass, harp, or classical guitar.

## Program of Study

- String Instruments Major (p. 69)

**STRINGS 141-0 Applied Violin for Music Majors (1 Unit)**

**STRINGS 142-0 Applied Viola for Music Majors (1 Unit)**

**STRINGS 143-0 Applied Cello for Music Majors (1 Unit)**

**STRINGS 144-0 Applied Double Bass for Music Majors (1 Unit)**

**STRINGS 151-0 Applied Harp for Music Majors (1 Unit)**

**STRINGS 171-0 Applied Guitar for Music Majors (1 Unit)**

**STRINGS 241-0 Applied Violin for Music Majors (1 Unit)**

**STRINGS 242-0 Applied Viola for Music Majors (1 Unit)**

**STRINGS 243-0 Applied Cello for Music Majors (1 Unit)**

**STRINGS 244-0 Applied Double Bass for Music Majors (1 Unit)**

**STRINGS 251-0 Applied Harp for Music Majors (1 Unit)**

**STRINGS 271-0 Applied Guitar for Music Majors (1 Unit)**

**STRINGS 305-0 Optional Recital (0 Unit)**

**STRINGS 311-0 Suzuki Pedagogy (0.5 Unit)** Fundamental principles of Suzuki philosophy and materials, with emphasis on application to violin. Open to all string players.

**STRINGS 315-1 Violin and Viola Pedagogy I (0.5 Unit)** Developmental approach to teaching beginning through advanced precollege violin and viola students. Includes apprenticeship teaching and observations. Designed as a one-year sequence. Open to all violinists and violists.

**STRINGS 315-2 Violin and Viola Pedagogy II (0.5 Unit)** Developmental approach to teaching beginning through advanced precollege violin and viola students. Includes apprenticeship teaching and observations. Designed as a one-year sequence. Open to all violinists and violists.

**STRINGS 315-3 Violin and Viola Pedagogy III (0.5 Unit)** Developmental approach to teaching beginning through advanced precollege violin and viola students. Includes apprenticeship teaching and observations. Designed as a one-year sequence. Open to all violinists and violists.

**STRINGS 316-1 Cello and Double Bass Pedagogy I (0.5 Unit)** Developmental approach to teaching beginning through advanced precollege cello and double bass students.

**STRINGS 316-2 Cello and Double Bass Pedagogy II (0.5 Unit)** Developmental approach to teaching beginning through advanced precollege cello and double bass students.

**STRINGS 316-3 Cello and Double Bass Pedagogy III (0.5 Unit)** Developmental approach to teaching beginning through advanced precollege cello and double bass students.

**STRINGS 318-1 Harp Technique and Pedagogy I (0.5 Unit)** Pedagogical instruction and demonstration of teaching techniques for all levels and ages.

**STRINGS 318-2 Harp Technique and Pedagogy II (0.5 Unit)** Pedagogical instruction and demonstration of teaching techniques for all levels and ages.

**STRINGS 318-3 Harp Technique and Pedagogy III (0.5 Unit)** Pedagogical instruction and demonstration of teaching techniques for all levels and ages.

**STRINGS 319-1 Orchestral Repertoire I (Violin,Viola,Cello,Dbl Bass,Harp) (0.5 Unit)**

**STRINGS 319-2 Orchestral Repertoire II (Violin,Viola,Cello,Dbl Bass,Harp) (0.5 Unit)**

**STRINGS 319-3 Orchestral Repertoire III (Violin,Viola,Cello,Dbl Bass,Harp) (0.5 Unit)**

**STRINGS 335-0 Selected Topics (0.5-1 Unit)** Topics vary; announced before registration. May be repeated.

**STRINGS 341-0 Applied Violin for Music Majors (1 Unit)**

**STRINGS 342-0 Applied Viola for Music Majors (1 Unit)**

**STRINGS 343-0 Applied Cello for Music Majors (1 Unit)**

**STRINGS 344-0 Applied Double Bass for Music Majors (1 Unit)**

**STRINGS 351-0 Applied Harp for Music Majors (1 Unit)**

**STRINGS 370-0 Junior Recital (0 Unit)**

**STRINGS 371-0 Applied Guitar for Music Majors (1 Unit)**

**STRINGS 374-0 Guitar Ensemble for Music Majors (0.5 Unit)**

Performance of the chamber literature for guitar: guitar duos, trios, and quartets; flute and guitar; voice and guitar; chamber works with strings; other instrumental combinations.

**STRINGS 375-1 Lute and Guitar History and Literature I (0.5 Unit)**

Analytical and historical survey of the literature for plucked instruments from the 16th through the 20th centuries. The study of tablatures, instrument construction and tuning, performance practice, and style.

**STRINGS 375-2 Lute and Guitar History and Literature II (0.5 Unit)**

Analytical and historical survey of the literature for plucked instruments from the 16th through the 20th centuries. The study of tablatures, instrument construction and tuning, performance practice, and style.

**STRINGS 375-3 Lute and Guitar History and Literature III (0.5 Unit)**

Analytical and historical survey of the literature for plucked instruments from the 16th through the 20th centuries. The study of tablatures, instrument construction and tuning, performance practice, and style.

**STRINGS 376-1 Guitar Pedagogy I (0.5 Unit)** Principles of individual and group study. Survey of development of right-and left-hand technique from 16th-century lute and vihuela tutors through modern classical guitar methods. Interaction between musical texture and technical innovations; influence of fingering on stylistic inflection and ornamentation.

**STRINGS 376-2 Guitar Pedagogy II (0.5 Unit)** Principles of individual and group study. Survey of development of right-and left-hand technique from 16th-century lute and vihuela tutors through modern classical guitar methods. Interaction between musical texture and technical innovations; influence of fingering on stylistic inflection and ornamentation.

**STRINGS 376-3 Guitar Pedagogy III (0.5 Unit)** Principles of individual and group study. Survey of development of right-and left-hand technique from 16th-century lute and vihuela tutors through modern classical guitar methods. Interaction between musical texture and technical innovations; influence of fingering on stylistic inflection and ornamentation.

**STRINGS 380-0 Senior Recital (0 Unit)**

**STRINGS 390-0 Studio Class (0 Unit)**

**STRINGS 392-0 Studio Ensemble for Music Majors (0.5 Unit)** Small ensembles based on studio instruments.

**STRINGS 393-0 Repertoire Studies (0.5 Unit)** Topics vary by quarter.

**STRINGS 399-0 Independent Study (0.5-1 Unit)**

## String Instruments Major

Bachelor of Music degrees in string instruments require a minimum of 48 units, and include core music requirements (13.5 units), major requirements (22.5-24 units), Foundational Disciplines (6 units), and elective requirements (4.5-6 units).

### Music Core Requirements (13.5 units)

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI
MUSIC 127-1 & MUSIC 127-2 & MUSIC 127-3	Keyboard Skills 1 and Keyboard Skills 2 and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	

### Violin, Viola, and Cello Performance (24 units)

Course	Title
100-level applied study (3 quarters)	
200-level applied study (3 quarters)	
300-level applied study (6 quarters)	
CONDUCT 393-0	Orchestral Organizations (12 quarters)
CONDUCT 391-0	Chamber Music (6 quarters)
String Pedagogy, selected from STRINGS 311-0, STRINGS 315-1,2,3 or STRINGS 316-1,2,3 (3 quarters)	
STRINGS 319-1 & STRINGS 319-2 & STRINGS 319-3	Orchestral Repertoire I (Violin,Viola,Cello,Dbl Bass,Harp) and Orchestral Repertoire II (Violin,Viola,Cello,Dbl Bass,Harp) and Orchestral Repertoire III (Violin,Viola,Cello,Dbl Bass,Harp)
STRINGS 370-0	Junior Recital
STRINGS 380-0	Senior Recital

### Double Bass Performance (22.5 units)

Course	Title
STRINGS 144-0	Applied Double Bass for Music Majors (3 quarters)
STRINGS 244-0	Applied Double Bass for Music Majors (3 quarters)
STRINGS 344-0	Applied Double Bass for Music Majors (6 quarters)
CONDUCT 393-0	Orchestral Organizations (12 quarters)
CONDUCT 391-0	Chamber Music (3 quarters)

STRINGS 316-1 & STRINGS 316-2 & STRINGS 316-3	Cello and Double Bass Pedagogy I and Cello and Double Bass Pedagogy II and Cello and Double Bass Pedagogy III
STRINGS 319-1 & STRINGS 319-2 & STRINGS 319-3	Orchestral Repertoire I (Violin,Viola,Cello,Dbl Bass,Harp) and Orchestral Repertoire II (Violin,Viola,Cello,Dbl Bass,Harp) and Orchestral Repertoire III (Violin,Viola,Cello,Dbl Bass,Harp)
STRINGS 370-0	Junior Recital (0 units)
STRINGS 380-0	Senior Recital (0 units)

### Harp Performance (24 units)

Course	Title
STRINGS 151-0	Applied Harp for Music Majors (3 quarters)
STRINGS 251-0	Applied Harp for Music Majors (3 quarters)
STRINGS 351-0	Applied Harp for Music Majors (6 quarters)
CONDUCT 393-0	Orchestral Organizations (12 quarters)
or CONDUCT 374-0	Band Organizations
or CONDUCT 378-0	Contemporary Music Ensemble
CONDUCT 391-0	Chamber Music (3 quarters)
STRINGS 318-1 & STRINGS 318-2 & STRINGS 318-3	Harp Technique and Pedagogy I and Harp Technique and Pedagogy II and Harp Technique and Pedagogy III
STRINGS 319-1 & STRINGS 319-2 & STRINGS 319-3	Orchestral Repertoire I (Violin,Viola,Cello,Dbl Bass,Harp) and Orchestral Repertoire II (Violin,Viola,Cello,Dbl Bass,Harp) and Orchestral Repertoire III (Violin,Viola,Cello,Dbl Bass,Harp)
STRINGS 392-0	Studio Ensemble for Music Majors
STRINGS 370-0	Junior Recital
STRINGS 380-0	Senior Recital

### Guitar Major Requirements (22.5 units)

Course	Title
STRINGS 171-0	Applied Guitar for Music Majors (3 quarters)
STRINGS 271-0	Applied Guitar for Music Majors (3 quarters)
STRINGS 371-0	Applied Guitar for Music Majors (6 quarters)
STRINGS 374-0	Guitar Ensemble for Music Majors (12 quarters)
STRINGS 376-1 & STRINGS 376-2 & STRINGS 376-3	Guitar Pedagogy I and Guitar Pedagogy II and Guitar Pedagogy III
STRINGS 375-1 & STRINGS 375-2 & STRINGS 375-3	Lute and Guitar History and Literature I and Lute and Guitar History and Literature II and Lute and Guitar History and Literature III
STRINGS 370-0	Junior Recital
STRINGS 380-0	Senior Recital

### Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (4.5-6 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	

Literature and Arts (1 unit)

English Composition (1 unit)

Electives (4.5 - 6 units, music or non-music courses)

Business/Finance Overlay course (may double count with any other requirement)

Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.

## Voice and Opera

[music.northwestern.edu/academics/areas-of-study/voice-opera](http://music.northwestern.edu/academics/areas-of-study/voice-opera)

Students majoring in voice take a concentrated program of courses designed to prepare them for professional performance. In addition to individual instruction, students take courses in vocal pedagogy, conducting, opera workshop, repertoire, and diction. A senior recital is required, and students are urged to take advantage of the numerous other performance opportunities offered by the school.

The opera program generally presents three opera productions each year, including two with full orchestra.

## Program of Study

- Voice and Opera Major (p. 70)

**VOICE 110-0 Applied Voice for Music Majors (1 Unit)** Lessons consist of individual instruction, with each student receiving the equivalent of 50 minutes of instruction weekly.

**VOICE 111-1 Phonetics and Diction I (0.5 Unit)** Required of first-year and transfer students majoring in voice. Three quarters: Italian, German, French.

**VOICE 111-2 Phonetics and Diction II (0.5 Unit)** Required of first-year and transfer students majoring in voice. Three quarters: Italian, German, French.

**VOICE 111-3 Phonetics and Diction III (0.5 Unit)** Required of first-year and transfer students majoring in voice. Three quarters: Italian, German, French.

**VOICE 210-0 Applied Voice for Music Majors (1 Unit)** Lessons consist of individual instruction, with each student receiving the equivalent of 50 minutes of instruction weekly.

### VOICE 305-0 Optional Recital (0 Unit)

**VOICE 310-0 Applied Voice for Music Majors (1 Unit)** Lessons consist of individual instruction, with each student receiving the equivalent of 50 minutes of instruction weekly.

**VOICE 311-0 Vocal Solo Class (0 Unit)** Weekly recital hour. Required for any student registered for full-credit private voice lessons.

**VOICE 323-0 Vocal Pedagogy for Undergraduates (0.5 Unit)** The fundamentals of vocal production, including laryngeal anatomy, posture, breathing, resonance, articulation, and registration. Topics also include health care of the professional voice and some pathologies of the vocal folds.

**VOICE 335-0 Selected Topics in Voice (0.5-1 Unit)** Topics vary; announced before registration. May include chanson, recitative, and non-English languages. May be repeated.

**VOICE 351-1 Undergraduate Opera Workshop I (0.5 Unit)** Advanced techniques for the performance of arias; methods of text and character analysis; audition techniques; study of opera scenes.

**VOICE 351-2 Undergraduate Opera Workshop II (0.5 Unit)** Advanced techniques for the performance of arias; methods of text and character analysis; audition techniques; study of opera scenes.

**VOICE 351-3 Undergraduate Opera Workshop III (0.5 Unit)** Advanced techniques for the performance of arias; methods of text and character analysis; audition techniques; study of opera scenes.

### VOICE 355-0 Vocal Coaching (0.5 Unit)

**VOICE 363-0 Opera Performance (0-0.5 Unit)** Opera Production.

**VOICE 365-0 Professional Preparation For Singers (0.5 Unit)** Designed to help the aspiring singer make the leap into professional work. Covers the musical, physical, and business aspects of being a professional musician. Includes teaching by guest artists.

### VOICE 370-0 Junior Recital (0 Unit)

### VOICE 380-0 Senior Recital (0 Unit)

### VOICE 390-0 Studio Class (0 Unit)

**VOICE 393-0 Repertoire Studies (0.5 Unit)** Topics vary by quarter and may include the German Lied, chanson, oratorio repertoire, and recitative.

**VOICE 399-0 Independent Study (0.5-1 Unit)** Permission of instructor and department required.

## Voice and Opera Major

Bachelor of Music degrees in voice and opera require a minimum of 48 units, and include core music requirements (13.5 units), major requirements (22.5 units), Foundational Disciplines (6 units), and elective requirements (6 units).

## Music Core Requirements (13.5 units)

Course	Title
MUSIC 111-1 & MUSIC 111-2 & MUSIC 111-3	Music Theory I and Music Theory II and Music Theory III
MUSIC 211-1 & MUSIC 211-2 & MUSIC 211-3	Music Theory IV and Music Theory V and Music Theory VI
MUSIC 126-1 & MUSIC 126-2 & MUSIC 126-3	Aural Skills I and Aural Skills II and Aural Skills III
MUSIC 226-1 & MUSIC 226-2 & MUSIC 226-3	Aural Skills IV and Aural Skills V and Aural Skills VI
MUSIC 127-1 & MUSIC 127-2 & MUSIC 127-3	Keyboard Skills 1 and Keyboard Skills 2 and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 214-0 & MUSIC 215-0 & MUSIC 216-0	The Classical Canon and Performers and Performance and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	

## Voice and Opera Performance (22.5 units)

Course	Title
VOICE 110-0	Applied Voice for Music Majors (3 quarters)
VOICE 210-0	Applied Voice for Music Majors (3 quarters)
VOICE 310-0	Applied Voice for Music Majors (6 quarters)
CONDUCT 364-0	Choral Organizations (12 quarters)
VOICE 111-1 & VOICE 111-2 & VOICE 111-3	Phonetics and Diction I and Phonetics and Diction II and Phonetics and Diction III
VOICE 311-0	Vocal Solo Class (12 quarters)
VOICE 323-0	Vocal Pedagogy for Undergraduates
VOICE 351-1 & VOICE 351-2 & VOICE 351-3	Undergraduate Opera Workshop I and Undergraduate Opera Workshop II and Undergraduate Opera Workshop III
VOICE 393-0	Repertoire Studies (2 quarters)
VOICE 380-0	Senior Recital

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (6 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (6 units; music or non-music courses)	
Business/Finance Overlay course (may double count with any other requirement)	
Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.	

## Winds and Percussion Instruments

[music.northwestern.edu/academics/areas-of-study/woodwinds](http://music.northwestern.edu/academics/areas-of-study/woodwinds)

[music.northwestern.edu/academics/areas-of-study/brass](http://music.northwestern.edu/academics/areas-of-study/brass)

[music.northwestern.edu/academics/areas-of-study/percussion](http://music.northwestern.edu/academics/areas-of-study/percussion)

Designed to prepare students for professional performance and teaching as well as for advanced study, the major in winds and percussion instruments offers a concentrated curriculum emphasizing applied studies, master classes, required participation in large and small ensembles, and recitals.

## Program of Study

- Winds and Percussion Instruments Major (p. 72)

**WIND\_PER 111-0 Applied Flute for Music Majors (1 Unit)**

**WIND\_PER 112-0 Applied Oboe for Music Majors (1 Unit)**

**WIND\_PER 113-0 Applied Clarinet for Music Majors (1 Unit)**

**WIND\_PER 114-0 Applied Saxophone for Music Majors (1 Unit)**

- WIND\_PER 115-0 Applied Bassoon for Music Majors (1 Unit)**  
**WIND\_PER 121-0 Applied Trumpet for Music Majors (1 Unit)**  
**WIND\_PER 122-0 Applied French Horn for Music Majors (1 Unit)**  
**WIND\_PER 123-0 Applied Euphonium for Music Majors (1 Unit)**  
**WIND\_PER 124-0 Applied Trombone for Music Majors (1 Unit)**  
**WIND\_PER 125-0 Applied Tuba for Music Majors (1 Unit)**  
**WIND\_PER 131-0 Applied Percussion for Music Majors (1 Unit)**  
**WIND\_PER 211-0 Applied Flute for Music Majors (1 Unit)**  
**WIND\_PER 212-0 Applied Oboe for Music Majors (1 Unit)**  
**WIND\_PER 213-0 Applied Clarinet for Music Majors (1 Unit)**  
**WIND\_PER 214-0 Applied Saxophone for Music Majors (1 Unit)**  
**WIND\_PER 215-0 Applied Bassoon for Music Majors (1 Unit)**  
**WIND\_PER 221-0 Applied Trumpet for Music Majors (1 Unit)**  
**WIND\_PER 222-0 Applied French Horn for Music Majors (1 Unit)**  
**WIND\_PER 223-0 Applied Euphonium for Music Majors (1 Unit)**  
**WIND\_PER 224-0 Applied Trombone for Music Majors (1 Unit)**  
**WIND\_PER 225-0 Applied Tuba for Music Majors (1 Unit)**  
**WIND\_PER 231-0 Applied Percussion for Music Majors (1 Unit)**  
**WIND\_PER 302-0 Warm-Up Class (0 Unit)**  
**WIND\_PER 305-0 Optional Recital (0 Unit)**  
**WIND\_PER 311-0 Applied Flute for Music Majors (1 Unit)**  
**WIND\_PER 312-0 Applied Oboe for Music Majors (1 Unit)**  
**WIND\_PER 313-0 Applied Clarinet for Music Majors (1 Unit)**  
**WIND\_PER 314-0 Applied Saxophone for Music Majors (1 Unit)**  
**WIND\_PER 315-0 Applied Bassoon for Music Majors (1 Unit)**  
**WIND\_PER 321-0 Applied Trumpet for Music Majors (1 Unit)**  
**WIND\_PER 322-0 Applied French Horn for Music Majors (1 Unit)**  
**WIND\_PER 323-0 Applied Euphonium for Music Majors (1 Unit)**  
**WIND\_PER 324-0 Applied Trombone for Music Majors (1 Unit)**  
**WIND\_PER 325-0 Applied Tuba for Music Majors (1 Unit)**  
**WIND\_PER 331-0 Applied Percussion for Music Majors (1 Unit)**  
**WIND\_PER 335-0 Selected Topics (0.5-1 Unit)** Topics vary; announced before registration. May be repeated.  
**WIND\_PER 347-0 Percussion Pedagogy (0.5 Unit)** Methods, materials, and writings related to percussion playing and teaching.  
**WIND\_PER 352-0 Preparing for an Audition (0.5 Unit)**  
**WIND\_PER 357-0 Reed Making (0.5 Unit)**  
**WIND\_PER 359-0 Teaching Techniques (0.5 Unit)**  
**WIND\_PER 360-0 Bass Clarinet (0.5 Unit)**  
**WIND\_PER 361-0 English Horn (0.5 Unit)**  
**WIND\_PER 362-0 Baroque Flute (0.5 Unit)**  
**WIND\_PER 370-0 Junior Recital (0 Unit)**  
**WIND\_PER 380-0 Senior Recital (0 Unit)**  
**WIND\_PER 390-0 Studio Class (0 Unit)**  
**WIND\_PER 392-0 Studio Ensemble for Music Majors (0.5 Unit)**

**WIND\_PER 393-0 Repertoire Studies (0.5 Unit)** Includes winds/brass/percussion orchestral repertoire, clarinet orchestral studies, and studies in woodwind and brass literature.

**WIND\_PER 399-0 Independent Study (0.5-1 Unit)**

## Winds and Percussion Instruments Major

Bachelor of Music degrees in winds and percussion require a minimum of 48 units, and include core music requirements (13.5 units), major requirements (22-23.5 units), Foundational Disciplines (6 units), and elective requirements (5-6.5 units).

### Music Core Requirements (13.5 units)

Course	Title
MUSIC 111-1	Music Theory I
& MUSIC 111-2	and Music Theory II
& MUSIC 111-3	and Music Theory III
MUSIC 211-1	Music Theory IV
& MUSIC 211-2	and Music Theory V
& MUSIC 211-3	and Music Theory VI
MUSIC 126-1	Aural Skills I
& MUSIC 126-2	and Aural Skills II
& MUSIC 126-3	and Aural Skills III
MUSIC 226-1	Aural Skills IV
& MUSIC 226-2	and Aural Skills V
& MUSIC 226-3	and Aural Skills VI
MUSIC 127-1	Keyboard Skills 1
& MUSIC 127-2	and Keyboard Skills 2
& MUSIC 127-3	and Keyboard Skills 3 (or higher course number based on placement)
MUSIC 214-0	The Classical Canon
& MUSIC 215-0	and Performers and Performance
& MUSIC 216-0	and Music in the Present
CONDUCT 326-0	Foundations of Conducting
One MUSICOL elective	
One 20th/21st century Music Studies elective	

## Flute, Clarinet, Saxophone, Bassoon, Trumpet, Horn, Euphonium, Trombone, and Tuba Performance (22 units)

Course	Title
100-level applied study (3 quarters)	
200-level applied study (3 quarters)	
300-level applied study (6 quarters)	
CONDUCT 374-0	Band Organizations (12 quarters)
or CONDUCT 393-0	Orchestral Organizations
or CONDUCT 378-0	Contemporary Music Ensemble
CONDUCT 391-0	Chamber Music (6 quarters)
WIND_PER 359-0	Teaching Techniques
WIND_PER 393-0	Repertoire Studies
WIND_PER 370-0	Junior Recital (Flute, Trumpet, and Horn only)
WIND_PER 380-0	Senior Recital

## Oboe Performance (23.5 units)

Course	Title
WIND_PER 112-0	Applied Oboe for Music Majors (3 quarters)
WIND_PER 212-0	Applied Oboe for Music Majors (3 quarters)
WIND_PER 312-0	Applied Oboe for Music Majors (6 quarters)
CONDUCT 374-0	Band Organizations (12 quarters)
or CONDUCT 393-0	Orchestral Organizations
or CONDUCT 378-0	Contemporary Music Ensemble
CONDUCT 391-0	Chamber Music (6 quarters)
WIND_PER 357-0	Reed Making (3 quarters)
WIND_PER 359-0	Teaching Techniques
WIND_PER 393-0	Repertoire Studies
WIND_PER 380-0	Senior Recital

## Percussion Performance (22 units)

Course	Title
WIND_PER 131-0	Applied Percussion for Music Majors (3 quarters)
WIND_PER 231-0	Applied Percussion for Music Majors (3 quarters)
WIND_PER 331-0	Applied Percussion for Music Majors (6 quarters)
CONDUCT 374-0	Band Organizations (12 quarters)
or CONDUCT 393-0	Orchestral Organizations
or CONDUCT 378-0	Contemporary Music Ensemble
CONDUCT 391-0	Chamber Music (6 quarters)
WIND_PER 347-0	Percussion Pedagogy
WIND_PER 393-0	Repertoire Studies
WIND_PER 370-0	Junior Recital
WIND_PER 380-0	Senior Recital

## Foundational Disciplines (6 units, chosen from 7 categories) and Elective Requirements (5-6.5 units)

Course	Title
Natural Sciences (1 unit)	
Empirical and Deductive Reasoning (1 unit)	
Social and Behavioral Sciences (1 unit)	
Historical Studies (1 unit)	
Ethical and Evaluative Thinking (1 unit)	
Literature and Arts (1 unit)	
English Composition (1 unit)	
Electives (5 - 6.5 units, music or non-music courses)	
Business/Finance Overlay course (may double count with any other requirement)	

Note: The six units of required Foundational Discipline courses must represent six of the seven categories. Foundational Disciplines may double count with any major or minor requirements other than the primary music major. There is no limit on the number of AP credits that may fulfill Foundational Discipline requirements for Bienen School degrees.

# SCHOOL OF COMMUNICATION

[communication.northwestern.edu](http://communication.northwestern.edu)

Communication is at the root of nearly everything we do, and mastering the art of communication can open doors to a wide range of careers. The School of Communication is committed to elevating and expanding access to the communication arts and sciences. Bridging theory and practice, our immersive curriculum and research opportunities position students for professional success in education, scholarship, media and artistic work, policy analysis, and advocacy. Through these pathways, we are building a collaborative, interdisciplinary community known as much for its achievements as the breadth of voices, perspectives, and traditions that shape them.

Founded by Robert Cumnock in 1878, the School of Communication is now the third largest of Northwestern's six undergraduate divisions. It annually enrolls approximately 1,000 undergraduate majors and 700 graduate students.

Originally, the curriculum and its related activities were concerned with public speaking and interpretative reading as performing arts. As the field grew, the school added instruction in theatre, speech pathology, audiology, radio, television, film, and other specialties in oral communication. Throughout its history the school has often been a pioneer in new fields of study, including film and audiology.

Today the five departments of instruction represent the diverse spectrum of study in the field of communication: communication sciences and disorders; communication studies; performance studies; radio/television/film; and theatre (including dance). All departments offer graduate courses. The School of Communication sponsors debate, film and video, playwriting, and theatre arts divisions of Northwestern's National High School Institute, also known as the "Cherubs."

In 2008 Northwestern opened a branch campus in Qatar, where programs in communication and journalism are offered. (See Campuses and Schools in The University chapter of this catalog.)

## Facilities

The School of Communication provides outstanding facilities in which students and faculty work, perform, pursue research, engage in media ventures, and connect with their community. The Patrick G. and Shirley W. Ryan Center for the Musical Arts, one of the campus's latest additions, is the home of the School of Communication Dean's Office and Office of Undergraduate Programs and Advising. The building also houses the administrative and faculty offices of the Departments of Theatre and Performance Studies.

Annie May Swift Hall—a beautifully restored legacy of Northwestern's early days that once housed all of the school's programs—is now home to the Department of Radio/Television/Film as well as the department's film library, the Peggy Dow Helmerich Auditorium, and the Alvina Krause Studio black box theater operated by the Department of Performance Studies. Students in the Department of Radio/Television/Film also have access to the Fisk Digital Media Studio. The nearby John J. Louis Hall is home to the film equipment center, computer animation facilities, a lecture/screening hall, and the Barbara and Garry Marshall Studio Wing, which includes the Hobson/Lucas Soundstage, the studios of WNUR-FM, and film and video production and postproduction facilities.

Louis Hall also houses an arts and technology lab, as well as spaces for performance studies, and for the writing and sound programs.

The Virginia Wadsworth Wirtz Center for the Performing Arts, recently renovated to increase student performance and rehearsal space, houses the Josephine Louis Theater, a 288-seat proscenium theater; the Ethel M. Barber Theater, a 439-seat thrust theater; four black box spaces, including the Hal and Martha Hyer Wallis and the Mussetter-Struble Theaters and the Clara, Lu 'n' Em Theater; and production facilities, including scene and costume shops, wet and dry design rooms, computer labs, rehearsal spaces, and more. In addition, the Department of Theatre sponsors occasional productions in Cahn Auditorium, Northwestern's 1,000-seat proscenium space. The Marjorie Ward Marshall Dance Center features two dance studios.

The Frances Searle Building is home to the School of Communication's science and research programs, including the Roxelyn and Richard Pepper Department of Communication Sciences and Disorders and the Department of Communication Studies. Across the street is the state-of-the-art facility for the school's Center for Audiology, Speech, Language, and Learning, which serves the greater Evanston community through excellence in clinical care, cutting-edge research, and student development. Additional communication studies offices are located at 1815 Chicago Avenue. Next door, Hardy House provides a home to the Northwestern Debate Society.

On Northwestern's Chicago campus in Abbott Hall are offices for the School of Communication master's program in communication and health and its treatment programs in voice, speech, and swallowing disorders. Additionally, the building houses the administrative headquarters for the Black Arts Consortium. In Spring 2021, the Virginia Wadsworth Wirtz Center for Performing and Media Arts in Chicago was completed. The state-of-the-art facility supports the School's MFA programs by providing dynamic spaces for student work while fostering partnerships with city arts institutions and audiences.

## Degree Requirements

The School of Communication grants the degree of bachelor of science in communication (BSCMN) or bachelor of arts in communication (BACMN) upon:

- a. the satisfactory completion of 42 course units;
- b. the fulfillment of the distribution requirements of the student's major department; and
- c. the completion of School requirements and an approved major in communication suited to the student's special interests and needs.

If students interrupt the program of study for an extended period of time and degree requirements are changed during this period, students are normally held to the new requirements.

In addition to, and independent of, the requirements set by the School of Communication, students must satisfy the Undergraduate Registration Requirement.

The Department of Communication Sciences and Disorders offers only the BSCMN, which does not include a foreign language requirement.

The Department of Communication Studies offers both the BSCMN and BACMN, both of which have a foreign language requirement. The BSCMN additionally requires a course on research methods in communication studies.

The Department of Radio/Television/Film offers only the BACMN, which has a foreign language requirement.

The Departments of Performance Studies and Theatre (including dance) offer both the BSCMN and BACMN. The BACMN has a foreign language requirement but the BSCMN does not.

Students in programs with a foreign language requirement must demonstrate two-year proficiency in a classical or modern foreign language. Proficiency is defined as competence in the work covered through the final quarter of a college-level second-year language course sequence (or equivalent as determined by each foreign language department). Students who enroll for course credit to satisfy the proficiency requirement must earn a grade no lower than C– in the final course of the second-year course sequence. This proficiency is established in precisely the same manner as in the Weinberg College of Arts and Sciences; see the Weinberg College (p. 216) section of this catalog.

## General Requirements

Of the 42 units of credit required for all major programs in the School of Communication, 32 must be completed with grades of A, B, or C (grades of C– do not satisfy this requirement). A minimum of 18 units of credit must be taken outside the major department (see distribution requirements below). All distribution courses and all courses applied to a major or a minor must be completed with a grade of C– or higher. See the major requirements for each program for additional grade requirements. Courses offered by the major department may not be taken for a P grade regardless of how they are applied to degree requirements. D and P grades may apply only to the elective requirement.

A transfer student will be required to complete a minimum of 21 credits at Northwestern, and at least 11 of those credits in the School of Communication. An advising meeting is required before the first registration for all transfer students.

## School Requirements

All first-year students in the School of Communication must complete a first-year seminar within the School. These seminars are designed to introduce incoming students to the study of human communication and expression through the interdisciplinary lenses of speech and hearing sciences, social scientific and humanistic studies of media, performance, film production, and storytelling.

All students in the School of Communication must complete the SoC Capstone requirement. The SoC Capstone is a culminating school-wide requirement that empowers students to holistically reflect upon what they have learned and how they have grown through their experiences of coursework, internships, research, independent studies, employment, personal experience, creative and co-curricular activities. This self-reflection helps students understand their strengths and areas for future development.

## Distribution Requirements

All major programs in communication require 18 units of credit outside the major department in the following areas:

- Mathematics, science, and technology
- Individual and social behavior
- Humanities and fine arts

Students should consult an advisor in the relevant major for the range of disciplines within each category and the number of courses required.

## Major Programs in Communication and Related Requirements

All students in the School of Communication must meet the requirements of one of the following major programs: communication studies, dance, human communication sciences, performance studies, radio/television/film, or theatre.

A comprehensive list of policies is available at <https://advising.soc.northwestern.edu/policies-procedures-forms/>.

## Degree Awarded

Students in the School of Communication pursue either a Bachelor of Arts in Communication (BACMN) or a Bachelor of Science in Communication (BSCMN) with a **major** in Communication Studies, Dance, Human Communication Sciences, Performance Studies, Radio/Television/Film, or Theatre. With the exception of students enrolled in the Bienen and McCormick dual degree programs, students will earn only **one degree** even if they have more than one major. For example, if you have a primary major in Theatre and a second major in Political Science, you will earn either a Bachelor of Arts or a Bachelor of Science in Communication with a major in Theatre and a major in Political Science. At graduation, students attend the Convocation for the School of their **primary major**, no matter what other programs or majors they might be completing. Students completing dual degrees are invited to participate in both convocation ceremonies.

## Academic Advising

[advising.soc.northwestern.edu](https://advising.soc.northwestern.edu)

Each School of Communication student is assigned an academic advisor who holds a faculty appointment in their department, and is knowledgeable about their particular major. This advisor is available for consultation, especially for the purpose of planning for the next registration. First-year students have a separate advising period before the fall registration and then have a total of three required advising meetings, one each quarter. Sophomores and transfer students are required to have two advising meetings during the academic year. Juniors are required to meet with their academic advisor when they petition to graduate, and seniors are required to consult with their academic advisor regarding their final degree audit. While these meetings satisfy the minimal academic advising requirements, students often find it valuable to consult with their advisors more frequently. Ultimate responsibility for meeting degree requirements rests with the student.

## Academic Standing, Probation, and Dismissal

[advising.soc.northwestern.edu/policies\\_procedures/academic-standing-probation-and-dismissal/](https://advising.soc.northwestern.edu/policies_procedures/academic-standing-probation-and-dismissal/) ([https://advising.soc.northwestern.edu/policies\\_procedures/academic-standing-probation-and-dismissal/](https://advising.soc.northwestern.edu/policies_procedures/academic-standing-probation-and-dismissal/))

## Academic Standing

The decision concerning the academic standing of a student is the responsibility of the faculty of the school in which the student is registered. Academic probation constitutes notice of unsatisfactory academic performance; it is a warning that minimum standards for graduation are not being met.

Unless a student demonstrates significant scholastic improvement during the period of probation and thereby indicates the ability to fulfill degree requirements within a reasonable period of time, the student may be dismissed from the University. A student will be notified in writing no later than the middle of a term that, because of unsatisfactory work in a previous term or terms, he or she will be excluded in the event of unsatisfactory work during the term for which the notice is issued.

## Academic Probation

The following students are ordinarily placed on academic probation:

- Students who have received final grades below C in two or more courses in any quarter or Summer Session
- Sophomores, juniors, or seniors who have a cumulative academic record below a C average on all work attempted at Northwestern University
- Students who have failed to complete at least three quarter-courses or the equivalent in each of two consecutive quarters
- Students who, on account of dropped courses, failure, or uncompleted courses, have failed to earn credit for an average of three quarter-courses per quarter after six quarters of residence
- Students who have failed to maintain a C average in the major or a professional field of study

The faculty of each school may impose such additional conditions of academic probation as they may deem appropriate.

## Removal from Academic Probation

Students on academic probation are ordinarily removed from probation if the deficiencies that resulted in probation have been remedied during the next succeeding quarter in residence. Students are rarely removed from probation on the basis of a program consisting of less than four courses graded on a basis other than the pass/no credit option. However, in the School of Communication, students enrolled in a course load of 3 credits and receiving a grade of C or higher in all three may be considered for removal from probation. If students on probation who receive grades of X or Y are not dismissed, probation continues until they have completed all courses or until the end of the next quarter in residence, when the students' records are again subject to scrutiny.

In no case are students removed from probation at the end of a quarter in which they have failed any course.

## Academic Dismissal

The following is a partial list of categories of students who may be dismissed for academic deficiencies (in every case the decision is determined in part by the student's cumulative academic record):

- Students on academic probation whose academic records have not improved significantly during the period of probation (which will not normally exceed two consecutive quarters)
- Students not on academic probation who fail in half the work in any quarter or Summer Session
- Students who demonstrate flagrant neglect of academic work at any time
- Students who do not make satisfactory progress toward completion of degree requirements

As a matter of general policy, the probation period for a first-year student may be extended to the third quarter of residence if such extension appears to be in the best interests of the student and the University. Such

consideration is not granted to a first-year student whose record clearly discloses lack of aptitude or flagrant neglect of work.

## Internship Credit

[advising.soc.northwestern.edu/policies\\_procedures/internships/](https://advising.soc.northwestern.edu/policies_procedures/internships/)  
[\(https://advising.soc.northwestern.edu/policies\\_procedures/internships/\)](https://advising.soc.northwestern.edu/policies_procedures/internships/)

Internships allow students to gain valuable organizational experience and apply theoretical knowledge to situations outside of the classroom. A total of 4 units of internship credit is permitted to count toward the undergraduate SoC degree. However, additional restrictions may apply depending on a student's other coursework, such as practica or independent studies, so students should consult with their SoC advisor on how credits may be applied.

Students seeking academic credit through SoC while working at an internship enroll in a weekly seminar (CMN 340) led by an internship coordinator. SoC's Office of External Programs, Internships and Career Services (EPICS) (<https://epics.soc.northwestern.edu/>) maintains a database for SoC students of internships primarily in Chicago, Los Angeles, and New York City, and opportunities may be available in other cities as well. Students can also find their own internships, and obtain approval to register them for credit through EPICS.

SoC students may also participate in Weinberg's Chicago Field Studies program (<https://internships.northwestern.edu/>); however, credit earned in the program will also be counted toward the limit of 4 internship credits total for the degree.

Regardless of whether internship credit comes from EPICS (taught by SoC faculty under CMN 340) or Chicago Field Studies (CFS in Weinberg), the limit of 4 internship credits to count toward SoC degree requirements supersedes the CFS policy of 6 allowed.

Within the total 4 units of internship allowable for your degree:

- One unit of CMN 340-0 School of Communication EPICS Internship Seminar can apply toward your major. Communication Studies, Communication Sciences and Disorders, Performance Studies, and Radio/TV/Film have additional restrictions on internships, independent studies, research practica and other special course types.
- One unit of CFS internship credit can apply as an additional distribution course. CFS internship credit cannot apply to your major.
- Additional credits of CMN 340-0 School of Communication EPICS Internship Seminar or CFS will count as electives.

Students may earn more than four credits from internship enrollment (this is sometimes advisable for international students or when a particular employer requires credit is received), but no more than four will count among the 42 required for the degree.

## Academic Advising

[advising.soc.northwestern.edu](https://advising.soc.northwestern.edu)

Each School of Communication student is assigned an academic advisor who holds a faculty appointment in their department, and is knowledgeable about their particular major. This advisor is available for consultation, especially for the purpose of planning for the next registration. First-year students have a separate advising period before the fall registration and then have a total of three required advising meetings, one each quarter. Sophomores and transfer students are

required to have two advising meetings during the academic year. Juniors are required to meet with their academic advisor when they petition to graduate, and seniors are required to consult with their academic advisor regarding their final degree audit. While these meetings satisfy the minimal academic advising requirements, students often find it valuable to consult with their advisors more frequently. Ultimate responsibility for meeting degree requirements rests with the student.

## **Minor Programs**

The School of Communication offers seven minor programs: dance, film and media studies, game design + media arts + animation, human communication sciences, performance studies, sound design, and theatre. Students may not earn both a major and a minor in the same area, except that radio/television/film majors may earn a minor in game design + media arts + animation or in sound design. Students wishing to pursue a minor should contact the Office of Undergraduate Programs and Advising (<https://advising.soc.northwestern.edu/about/contact/>) to be assigned a minor adviser. No course for the minor may be taken utilizing the P/N option, and all classes must be completed at a grade of C– or higher in order to be counted toward the minor. School of Communication minors are open to all Northwestern undergraduate students. Please see the appropriate departmental sections for descriptions of the minors in performance studies and theatre. The Department of Communication Sciences and Disorders administers the minor in human communication sciences. The Department of Radio/Television/Film administers the minor programs in film and media studies, game design + media arts + animation, and sound design. The Department of Theatre administers the minor in dance.

## **Dual Bachelor's Degree Programs**

Two programs allow undergraduates to combine a bachelor's degree in communication with a bachelor's degree in another Northwestern undergraduate school. One results in a BA or BS from the School of Communication and a BS from the McCormick School of Engineering and Applied Science, and the other results in a BA or BS from the School of Communication and a BMus or BAMus from the Bienen School of Music. Both options typically require five years of study.

## **Certificate Programs**

The Department of Theatre administers the Music Theatre Certificate (p. 104).

The School of Communication collaborates with the McCormick School of Engineering to offer the Human Computer Interaction (HCI) Certificate (p. 190).

## **Modules**

Modules are highly focused plans of study that include formal coursework, co-curricular activities, and pre-professional experiences, and culminate in the creation of a capstone project. Through extended, structured learning experiences, modules provide a flexible way to build student-faculty cohorts, promote in-depth learning in specific areas, and develop students' abilities to articulate and present what they have learned. For more information about modules, visit the School of Communication's website at [advising.soc.northwestern.edu/undergraduate-programs/soc-academic-modules/](https://advising.soc.northwestern.edu/undergraduate-programs/soc-academic-modules/) (<https://advising.soc.northwestern.edu/undergraduate-programs/soc-academic-modules/>).

To view module requirements within the catalog, please click on the relevant module below.

- Acting for the Screen (<https://catalogs.northwestern.edu/undergraduate/communication/module-acting-for-the-screen/>)
- Comedy Arts (<https://catalogs.northwestern.edu/undergraduate/communication/module-comedy-arts/>)
- Creating the Musical (<https://catalogs.northwestern.edu/undergraduate/communication/module-creating-the-musical/>)
- Directing for the Screen (<https://catalogs.northwestern.edu/undergraduate/communication/module-directing-for-the-screen/>)
- Playwriting (<https://catalogs.northwestern.edu/undergraduate/communication/module-playwriting/>)
- Theatre for Young Audiences (<https://catalogs.northwestern.edu/undergraduate/communication/module-theatre-for-young-audiences/>)
- Theatre Management (<https://catalogs.northwestern.edu/undergraduate/communication/module-theatre-management/>)
- Theatrical Design (<https://catalogs.northwestern.edu/undergraduate/communication/module-theatrical-design/>)

## **Research Practica**

Opportunities sometimes arise for a student to assist with research, teaching, and/or a production in collaboration with a faculty member. Sometimes faculty will invite students to participate in a practicum, but students may also approach a professor whose activities or area of expertise particularly interests them. For information on how to register for a practicum, visit [advising.soc.northwestern.edu/policies\\_procedures/practica/](https://advising.soc.northwestern.edu/policies_procedures/practica/) ([https://advising.soc.northwestern.edu/policies\\_procedures/practica/](https://advising.soc.northwestern.edu/policies_procedures/practica/)). Professor approval is required to register.

## **Independent Study**

Independent study is available by petition to juniors and seniors who have a minimum 3.0 grade-point average. Sophomores who have a compelling academic rationale to do so are also encouraged to petition to take an independent study. Petitions are available online at [advising.soc.northwestern.edu/policies\\_procedures/independent-studies/](https://advising.soc.northwestern.edu/policies_procedures/independent-studies/) ([https://advising.soc.northwestern.edu/policies\\_procedures/independent-studies/](https://advising.soc.northwestern.edu/policies_procedures/independent-studies/)). Students must secure a faculty sponsor to guide their independent study. The undergraduate dean must approve all independent study proposals. No more than one independent study will be approved per student per quarter. The School of Communication does not limit the number of independent studies that a student may take, but a maximum of 2 units of 399 may apply to the major degree requirements. Requests for independent study in the Weinberg College of Arts and Sciences must go through that school's approval procedure. Regardless of the number of independent studies approved in Weinberg, no more than 2 units of 399 may be applied to the distribution requirements. Additional units of 399 are counted as electives. Independent study may not be taken using the P/N option. Some majors have additional rules regarding independent study; see the major requirements for details.

## **Internships**

Internships (also sometimes referred to as field studies) allow students to gain valuable organizational experience and apply theoretical knowledge to situations outside the classroom. SoC's Office of External Programs, Internships and Career Services (EPICS) (<https://epics.soc.northwestern.edu/>) maintains a database for SoC students

of internships primarily in Chicago, Los Angeles, and New York City, and opportunities may be available in other cities as well. Students may receive up to four academic credits by enrolling in a weekly seminar led by an internship coordinator as well as working at an internship. One credit may be applied to the major requirements, and the remaining credits are electives. Additional rules may apply. For more information on internships, interested students should visit [advising.soc.northwestern.edu/policies\\_procedures/internships/](https://advising.soc.northwestern.edu/policies_procedures/internships/) ([https://advising.soc.northwestern.edu/policies\\_procedures/internships/](https://advising.soc.northwestern.edu/policies_procedures/internships/)), and consult with their academic advisor.

## Student-Organized Seminars

A student-organized seminar (SOS) consists of a small group of students (under the sponsorship of one or more faculty members) who organize a course to explore a specific topic not covered in, but deemed appropriate for, the Northwestern University curriculum. Typically, an SOS comprises ten or fewer students. One or more students take responsibility for developing the syllabus, organizing the weekly seminar work, advertising the seminar, and managing the class. Guidelines for proposing an SOS are available online at [advising.soc.northwestern.edu/policies\\_procedures/student-organized-seminars/](https://advising.soc.northwestern.edu/policies_procedures/student-organized-seminars/) ([https://advising.soc.northwestern.edu/policies\\_procedures/student-organized-seminars/](https://advising.soc.northwestern.edu/policies_procedures/student-organized-seminars/)).

## Study Abroad

Students are encouraged to consider studying abroad at some point during their educational career. Most aspects of study abroad are handled by the Global Learning Office: [www.northwestern.edu/abroad/index.html](http://www.northwestern.edu/abroad/index.html) ([https://www.northwestern.edu/abroad/](http://www.northwestern.edu/abroad/)). For more information see the Undergraduate Education chapter of this catalog.

## Graduate Study

The School of Communication has been a national center for graduate study and research in the fields of communication arts and sciences for many years.

Programs for the master of arts, master of fine arts, and doctor of philosophy degrees with majors in communication are administered by the Graduate School of Northwestern University. All candidates for these degrees must satisfy the Graduate School requirements.

The School of Communication itself offers doctoral degrees in audiology and in speech-language pathology, the master of arts in sound arts and industries, and master of science degrees in communication, leadership for creative enterprises, and speech, language, and learning.

For a list of all of the School of Communication's graduate programs, including links to program websites, visit their webpage for Graduate Programs (<https://communication.northwestern.edu/academics/graduate-programs/>).

## Co-curricular Activities and Programs

A variety of co-curricular opportunities are available to School of Communication students. Each fall quarter, Northwestern's Activities Fair is the place to check out student groups and clubs, and additional resources for connecting with student groups can be found at [advising.soc.northwestern.edu/campus-resources/organizations-and-activities/](https://advising.soc.northwestern.edu/campus-resources/organizations-and-activities/) (<https://advising.soc.northwestern.edu/campus-resources/organizations-and-activities/>).

In order to participate in co-curricular and student group activities, students must be simultaneously enrolled in classes at Northwestern. Students who have graduated or who are taking a quarter off from enrollment may not participate in co-curricular or student group activities. This includes all department-sponsored and student-run theatre and film projects and productions.

## Communication Sciences and Disorders

<https://communication.northwestern.edu/academics/communication-sciences-and-disorders/index.html> (<https://communication.northwestern.edu/academics/communication-sciences-and-disorders/>)

The Roxelyn and Richard Pepper Department of Communication Sciences and Disorders offers a major in human communication sciences, providing undergraduate students with a foundation for the study of hearing, speech, swallowing, language, and learning, and their disorders. The department's classroom and research facilities are located in the Frances Searle Building on the Evanston campus, adjacent to the Northwestern University Center for Audiology, Speech, Language, and Learning clinic. The undergraduate program emphasizes the basic science principles underlying all human communication and cognition, and introduces students to clinical issues and research findings that pertain to lifespan development and disorders of communication. The department and field are highly interdisciplinary, drawing on neuroscience, data science, technology, and more. The major in human communication sciences is appealing to students who plan to attend graduate or professional school in fields such as speech-language pathology, audiology, education, medicine, dentistry, and biomedical engineering, as well as for research. It is an attractive major particularly for students who plan to become health practitioners, providing opportunities for students to connect their study of basic scientific principles to research and clinical activities as well as real-life issues. Students who do not pursue medical, clinically based, or research graduate degrees may enter careers in health-related private industry or the public sector.

Undergraduate majors in human communication sciences can pursue a course of study tailored to their goals, including coursework to prepare specifically for a career in audiology and hearing sciences, or in speech-language pathology.

*Audiology and hearing sciences* encompasses the study of hearing, hearing disorders, and the treatment of hearing disorders. Emphasis is on basic communication science, including study of the anatomical, physiological, and physical bases of hearing. Undergraduate courses present information on normal communication processes, and provide an introduction to audiologic assessment and hearing loss management.

*Speech-language pathology* introduces students to the psychological, linguistic, neurological, acoustic, anatomical, and physiological bases of typical speech, swallowing, language, and learning behavior. As their familiarity with typical processes increases, students explore the communicative disorders that result from the disruption of these processes. Advanced undergraduate courses expand students' knowledge in such areas as learning and neurodevelopmental disorders (including autism), the neuroscience of communication, cultural and socio-economic influences on language acquisition and usage, and clinical practice.

## **Research Practicum**

Students may register for a research practicum in which they gain research experience by working with a faculty member on design, execution, and presentation of a research project. Students may develop ideas for an independent study based on their research practicum experience.

## **Independent Study**

Students may register for units of independent study, in which they work closely with a faculty member on a topic of mutual interest. Students interested in independent study should select courses that may lead to more advanced library or laboratory research.

## **Programs of Study**

- Human Communication Sciences Major (p. 79)
- Human Communication Sciences Minor (p. 80)

## **Learning Objectives**

Students should be able to...

- Summarize the biological and physiological mechanisms, acoustic phenomena, and scientific theories that underlie human communication.
- Compare and contrast typical development and presentation with disorders of speech, language, learning, hearing, and swallowing.
- Describe equity-informed principles and methods of prevention, assessment, and intervention for communication disorders.
- Relate the scope of practice of audiologists and speech language pathologists to broader services and systems in community, school, and medical settings.
- Recognize the value of communication diversity across society, including from minoritized groups.
- Interpret data and critique research studies in the field of communication sciences and disorders.

## **Courses**

Undergraduates may take some 400-level courses with permission of the instructor.

**CSD 108-0 Sound and Communication Health (1 Unit)** Introduction to communication sciences and disorders. Role of sound in basic human communication; hearing, speech, language, and learning mechanisms required to process and produce sound; assessment and treatment of disorders caused by a breakdown in sound processing. May not be taken with or after CSD 318-0, CSD 320-0, or CSD 373-0.

### **CSD 110-0 Introduction to Hearing and Speech Acoustics (1 Unit)**

Introduction to acoustics, measurement of hearing, and the acoustical properties of speech sounds. Sound waves; standards of measuring magnitude; audiograms; source-filter theory; spectrograms.

### **CSD 112-0 The Scientific Exploration of Communication (1 Unit)**

Introduction to biology and physics of human communication. Basic properties of speech sounds and how they are produced and received; relation between human anatomical structures involved in sound production, modulation, and reception; brain mechanisms of processing speech sounds. *Natural Sciences Distro Area*

**CSD 202-0 Neurobiology of Communication (1 Unit)** Human anatomy, physiology, and neurology in relation to communicative behavior. Sensory, perceptual, cognitive, and motor processes. *Natural Sciences Distro Area*

**CSD 205-0 Study of Learning and Learning Problems in the Classroom (1 Unit)** Study of children's learning in classroom settings. Field placement, using informal assessments of social, cognitive, and communication functioning, for children with and without exceptionalities.

**CSD 207-0 Seminar in Communication Sciences & Disorders (1 Unit)** Throughout this course, students will consider what it means to be "bilingual," and explore how bilingualism shapes human communication, including language development and learning, the production and perception of speech, cognitive function, and neural activity, as well as the perceived benefits and pitfalls of bilingualism from a cognitive and educational perspective.

**CSD 301-0 Anatomy and Physiology of the Vocal Mechanism (1 Unit)** Anatomical and physiological mechanisms of breathing, phonation, and articulation. Laboratories include dissection and participation in physiological research. Prerequisite: sophomore standing or above. *Natural Sciences Distro Area*

### **CSD 302-0 Anatomy and Physiology of the Peripheral Hearing Mechanism (1 Unit)**

Gross and fine structure; function of the peripheral auditory system. Prerequisites: junior standing or above, CSD 202-0, or consent of instructor.

*Natural Sciences Distro Area*

**CSD 303-0 Brain and Cognition (1 Unit)** Neural bases of cognitive processing with emphases on neuroimaging approaches in the areas of encoding, perception, attention, memory, language, reading, motor control, and executive functioning. Taught with Psych 327-0; students may not earn credit for both courses. *Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Social Behavioral Sciences Distro Area*

**CSD 304-0 Statistics in Communication Sciences and Disorders (1 Unit)** Introduction to research design and data analysis in communication sciences and disorders; statistical inference. *Formal Studies Distro Area*

**CSD 305-0 Phonetics (1 Unit)** Training in transcription of English speech sounds. Introduction to phonological analysis, dynamics of articulation, and dialect variations. *Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Social Behavioral Sciences Distro Area*

### **CSD 306-0 Psychoacoustics (1 Unit)**

Principles underlying perception of pitch, loudness, auditory space, auditory patterns, and speech. Psychophysical procedures for studying psychoacoustics and the impact of hearing impairment are considered. *Social Behavioral Sciences Distro Area*

**CSD 309-0 Culture, Language and Learning (1 Unit)** Language and culture; transmission of culture through language; effects of cultural variety on perception, cognition, and learning; implications of cultural and linguistic diversity in communicative disorders. *Social Behavioral Sciences Distro Area*

### **CSD 310-0 Biological Foundations of Speech and Music (1 Unit)**

Anatomy and physiology of the central auditory pathway, experience-related neural plasticity, right/left brain specialization, audiovisual integration, auditory learning and perception, and neural encoding of speech and music. Crosslisted with CSD 410-0 and SAI 502-0.

Prerequisite: junior standing or consent of instructor.

*Natural Sciences Distro Area*

**CSD 318-0 Introduction to Audiology (1 Unit)** Introduction to the measurement of hearing in humans. Basic anatomy of the ear, measurement of hearing, potential disorders of hearing. *Natural Sciences Distro Area*

**CSD 319-0 Aural Rehabilitation (1 Unit)** Principles and practices in rehabilitation of children and adults, including use of sensory aids, counseling, communication remediation (emphasizing speech reading), and auditory training techniques. Prerequisite: CSD 318-0.

**CSD 320-0 Introduction to Speech, Language, Learning, and Their Disorders (1 Unit)** Overview of normal and disordered communication. Speech, language, hearing, and cognitive development disorders and their psychosocial effects, across the age continuum according to etiology, clinical manifestations, and intervention. Anatomy and physiology of speech, language, and hearing. Service-delivery settings; ethical and legal considerations; professional issues.

**CSD 332-0 Clinical Assisting in Speech and Language Pathology (1 Unit)** Introduction to clinical practice, the dynamics of the client-clinician relationship and general clinical protocol, and the development and execution of therapy goals and procedures. Prerequisites: CSD 392-0 and CSD 305-0, or consent of instructor.

**CSD 334-0 Delivery Systems in Speech & Language Pathology (1 Unit)** Organization and administration of speech language pathology services in schools, health care agencies, and private practice.

*Social Behavioral Sciences Distro Area*

**CSD 342-0 Language and Cognition in Atypical Development (1 Unit)** Description and theory relevant to the cognitive, linguistic, and social development of individuals with different developmental disorders throughout the lifespan. *Social Behavioral Sciences Distro Area*

**CSD 369-0 Special Topics in Communication Sciences and Disorders (0.5-1 Unit)**

Current scientific and professional issues in communication sciences and disorders. Topics vary by offering.

**CSD 373-0 Introduction to Learning Disabilities (1 Unit)** Psychological, neurological, and linguistic theories of language and learning as related to learning disabilities. *Social Behavioral Sciences Distro Area*

**CSD 376-0 Diagnostic & Remedial Approaches for Children With Learning Problems (1 Unit)**

Introduction to the field of learning disabilities and its theoretical perspectives, assessment, and instruction principles, and to the process of clinical teaching. Emphasis on instruction, accommodation, service delivery, progress monitoring, and transition.

*Social Behavioral Sciences Distro Area*

**CSD 380-0 Introduction to Clinical Procedures in Learning Disabilities (1 Unit)**

Practicum experience in clinical settings. Learning processes and application of instructional approaches. Field studies, reading, and weekly seminars. Prerequisite: CSD 376-0.

**CSD 382-0 Autism Spectrum Disorder (1 Unit)** Overview of autism, focusing on its clinical presentation and potential causes, diagnosis, assessments for characterizing autistic features in research, evaluation (based on behavior, cognition, neuroimaging, and genetics) of theories of autism's causes, and controversies (changing prevalence, myths about causation).

**CSD 392-0 Language Development and Usage (1 Unit)** Development of spoken and written language as it relates to child development; includes phonological, morphological, syntactic, semantic, and pragmatic components. Cultural and individual linguistic diversity. *Social Behavioral Sciences Distro Area*

**CSD 395-0 Cognitive Neuroscience of Human Communication (1 Unit)**

In-depth study of cognitive neuroscience methods (MRI, EEG, etc.) and what they have revealed about human communication and its disorders. The focus is on reading and critiquing research papers. Students also

work as a team to design, execute hands-on, and analyze data from their own EEG experiment.

**CSD 398-0 Research Practicum in Communication Sciences and Disorders (0.5-1 Unit)** Working with a faculty member on design, execution, and presentation of a research project. Activities may include a review of literature, design of an experiment, data collection, coding, analysis, and spoken or written presentation of experimental results.

**CSD 399-0 Independent Study (0.5-1 Unit)** Prerequisite: consent of undergraduate dean after submission of petition.

## Human Communication Sciences Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

## Major Requirements (12 units)

1 COMM\_ST course and 11 CSD courses, all of which must be passed with a grade of C (not C-) or higher.

Course	Title
COMM_ST 102-0	Public Speaking

## CSD Courses (11 units)

Course	Title
CSD 110-0	Introduction to Hearing and Speech Acoustics
CSD 392-0	Language Development and Usage
CSD 318-0	Introduction to Audiology
CSD 320-0	Introduction to Speech, Language, Learning, and Their Disorders
7 additional CSD courses <sup>1</sup>	

<sup>1</sup> Excluding CSD 108-0 Sound and Communication Health, CSD 202-0 Neurobiology of Communication, and CSD 304-0 Statistics in Communication Sciences and Disorders; no more than two research and/or internship credits may be counted toward the total required

## School Requirements (1 unit)

### First-Year Seminar (1 unit)

Course	Title
CMN 101-0	SoC First Year Seminar: Interdisciplinary Topics in Communication Arts & Sciences

### SoC Capstone

This requirement can be fulfilled by a combination of CMN 398-1 and CMN 398-2. Other courses may be appropriate as substitutions for CMN 398-1 and/or CMN 398-2. Students may consult with their SoC academic advisor if they have questions about appropriate substitutions.

Course	Title
CMN 398-1	SoC Capstone: Lecture
CMN 398-2	SoC Capstone: Lab

## Additional Requirements (29 units)

### Distribution Requirements (18 units)

18 units of credit outside the department, including:

- 5 in the School of Communication's science, mathematics, and technology distribution area, including:

- **Statistics (1 course)**

Course	Title
CSD 304-0	Statistics in Communication Sciences and Disorders
or PSYCH 201-0	Statistical Methods in Psychology
or STAT 232-0	Applied Statistics

- **Neurobiology (1 course)**

Course	Title
CSD 202-0	Neurobiology of Communication
or PSYCH 221-0	Introduction to Neuroscience
or BIOL_SCI 302-0	Fundamentals of Neurobiology
or NEUROSCI 202-0	Cellular and Molecular Neuroscience

- **Mathematics (1 course)**

- **Animal-related Biology (1 course)**

Course	Title
Excluding:	
BIOL_SCI 104-0	Plant-People Interactions
BIOL_SCI 109-0	The Nature of Plants

- **Physics or Chemistry (1 course)**

- Either the biology or the physics/chemistry course must have a lab component
- 3 in the school's individual and social behavior distribution area
- 3 in the school's humanities and fine arts distribution area
- 7 additional units of credit outside the department

### Electives (11 units)

Electives in communication and other areas to complete a minimum of 42 units of credit.

### Writing Proficiency

Requirement for all students.

## Honors in Communication Sciences and Disorders

An honors program is available for Human Communication Sciences majors in their senior year who have maintained an outstanding undergraduate record through their junior year. Upon successful completion of an honors project, they will graduate with department honors in communication sciences and disorders. Also see Honors and Prizes (p. 25).

## Human Communication Sciences Minor

<https://communication.northwestern.edu/academics/communication-sciences-and-disorders/undergraduate-programs/minor-human-communication-sciences.html>

The minor in human communication sciences enables students to expand their understanding of the physical and physiological principles underlying communication. The minor is suited to students who want to learn about communication-based health issues, or to apply the knowledge and skills gained from their major to health-related industries by which they can help others. It is a strong complement to studies in therapies that use art, dance, or theatre to reach children with learning disabilities or other developmental difficulties.

## Minor Requirements (7 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor.

A minor in human communication sciences requires 7 units of credit, of which 6 units must be in the communication sciences and disorders department. A maximum of 1 unit of research credit may be counted toward the total units required.

Course	Title
1 neurobiology course selected from the following options:	
CSD 202-0	Neurobiology of Communication
or PSYCH 221-0	Introduction to Neuroscience
or BIOL_SCI 302-0	Fundamentals of Neurobiology
or NEUROSCI 202-0	Cellular and Molecular Neuroscience
3 core CSD courses:	
CSD 108-0 & CSD 110-0 & CSD 392-0	Sound and Communication Health and Introduction to Hearing and Speech Acoustics and Language Development and Usage
Any 3 additional CSD courses, excluding CSD 202-0 Neurobiology of Communication. Only 1 research credit (CSD 398-0 Research Practicum in Communication Sciences and Disorders or CSD 399-0 Independent Study) may be applied toward the HCS minor.	

## Communication Studies

<https://communication.northwestern.edu/academics/communication-studies/index.html> (<https://communication.northwestern.edu/academics/>)

The Department of Communication Studies offers courses that explore the major media, practices, and problems of a communication-intensive society. Topics include—but are not limited to—bargaining and negotiation, collective decision making, organizational innovation, human-computer interaction, Internet use, popular culture, social movements, and the history of political discourse in the United States. Students work with scholarship from the humanities and the social sciences, and coursework emphasizes the analytical and ethical requirements of responsible scholarship. Both required and elective courses are intended to prepare students for personal success and civic leadership through informed and ethical communication teaching, research, and practice in and for a world of diversity, equity, inclusion, and social justice. The Department of Communication Studies commits to the cultivation of an inclusive learning environment where diverse perspectives are recognized, respected, and seen as sources of strength. We expect that students, faculty, administrators, and staff will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own. The department embraces the position that

our intellectual community is enriched and enhanced by diversity along many dimensions. The department values the intersections of these experiences and characteristics in our community.

## Program of Study

- Communication Studies Major (p. 85)

### **COMM\_ST 101-1 Communication in Context: Introduction (1 Unit)**

Introduction to Communication Studies as a broad and interdisciplinary field, looking at important domains, processes and perspectives for understanding communication phenomena. *SOC First-Year Seminar*

### **COMM\_ST 101-2 Communication in Context: Analysis & Research (1 Unit)**

The second course moves beyond the introduction offered in the first course (Communication Studies 101-1 Communication in Context: Introduction) through additional skills training and expanded research and analytic assignments. Prerequisites: COMM\_ST 101-1. *SOC First-Year Seminar*

**COMM\_ST 102-0 Public Speaking (1 Unit)** Theory, composition, delivery, and criticism of public speeches.

**COMM\_ST 103-0 Argumentation and Debate (1 Unit)** Theories of argumentation and debate, with many opportunities for practice. Analysis and evaluation of the discourse related to public controversies.

**COMM\_ST 159-0 Computing Everywhere (0 Unit)** This course teaches computing literacy to non-technical undergraduate students.

### **COMM\_ST 201-0 Research Methods in Comm Studies (1 Unit)**

Foundations of knowledge in many areas of the field, including the nature of interpersonal interaction and the impact of mass media. How communication researchers do their work; how to judge the quality of research products. Prerequisite for various other courses in the department.

**COMM\_ST 205-0 Theories of Persuasion (1 Unit)** Survey of major theories that explain how to change another person's attitudes and behaviors. Applications to persuasion within a variety of contexts, including relationships, organizations, legal campaigns, and the mass culture.

**COMM\_ST 215-0 Principles of Rhetorical Criticism (1 Unit)** Introduction to techniques of rhetorical analysis for use in describing, evaluating, and participating in discussions of public issues. Historical and contemporary examples of public discourse illuminate how symbolic action affects decision making and power relations in public life.

**COMM\_ST 221-0 Media & Publics Across Cultures (1 Unit)** This course examines communication and culture in an increasingly digital and globalized present, using a combination of theoretical texts and case studies to understand the complex relationship between media and publics around the world.

**COMM\_ST 225-0 Communication and Culture (1 Unit)** How the concept of "culture" is constituted and disseminated through practices, processes, and mechanisms of "communication." Theories of myriad forms of mediation-interpersonal, off-and- online, popular, and mass-mediated shaping our relationships with ourselves and the world around us.

**COMM\_ST 227-0 Communication & Technology (1 Unit)** Examines factors informing and shaping the design of everyday objects and our virtual world; psychological aspects of computer-mediated communication and virtual collaboration, including impression formation, group dynamics, and social networks; social and institutional structures in which human communication is situated. Prerequisite for the Digital Media undergraduate curriculum module.

**COMM\_ST 228-0 AfroFeministFutures (1 Unit)** This course invites students to explore Black and feminist speculative fiction as a site for social justice advocacy. Students will read classic feminist and afrofuturist science fiction as they prepare their own original short stories for publication. Drawing heavily on the work of feminist afrofuturist Octavia Butler, students will engage imaginative narratives that allow them to think through solutions to the problems of our time. Students will explore the genre elements of short stories and speculative fiction, ultimately integrating these lessons into their own short stories. This is a writing and reading intensive class.

### **COMM\_ST 241-0 Theories of Relational Communication (1 Unit)**

An overview of communication theories and research dealing with developing, sustaining, and terminating interpersonal relationships. Direct application to friendship, work, and romantic relationships.

**COMM\_ST 246-0 Intro to Health Communication (1 Unit)** Introduction to health communication. Key areas of the field, with focus on providers, patients and their families, hospital networks, nonprofit organizations, and government agencies.

### **COMM\_ST 248-0 Black Feminist Health Science Studies (1 Unit)**

Black feminist health science studies is an emergent subfield and critical intervention into a number of intersecting arenas of scholarship and activism. Students in this course will examine important issues in healthcare and science by analyzing some of the foundational assumptions in the field of medicine. We will use contemporary as well as historical moments to investigate the evolution of "scientific truth" and its impact on the U.S. cultural landscape. Students will engage theories that range from explorations of the linguistic metaphors of the immune system, the medicalization of race, to critiques of the sexual binary, all in an effort to uncover some of the beliefs that have become central to science. Students will work to make their learning accessible to people outside the institution by creating podcast episodes that address current issues in this area.

### **COMM\_ST 250-0 Team Leadership and Decision Making (1 Unit)**

Theories and research relating to communication in small groups and group decision making.

### **COMM\_ST 250-SA Team Leadership and Decision Making (1 Unit)**

Theories and research relating to communication in small groups and group decision making.

**COMM\_ST 255-0 Understanding Media Markets: Users, Makers and Metrics (1 Unit)** How the preferences and habits of media users, the strategies and constraints of media makers, and the growing prevalence of data and metrics form a dynamic marketplace that shapes public attention.

**COMM\_ST 261-0 Introduction to Strategic Communication (1 Unit)** The affordances of new technologies and changes in the modern business landscape have fundamentally transformed strategic communication. Where previous research and practice has separated public relations from organizational communication, the modern environment makes such a distinction not only meaningless, but dangerous. This course, using case studies and foundational readings, explores the nature of the modern organization and the role of communication in it.

**COMM\_ST 263-0 Risk Communication (1 Unit)** What is effective risk communication? If the last few years have taught us anything, it is the need for effective risk communication. Readings and lectures will examine social psychology and communication discoveries that inform our understanding of how people interpret risk information and make decisions. Through discussions, in-class activities, and student-led projects, students will explore the creation and evaluation of effective risk

messages. Special emphasis will be given to the context of health and the environment.

**COMM\_ST 270-0 Media Effects (1 Unit)** Media content and effects are explored in various domains, including politics, violence, sexuality, marketing, health, science, and video games. The course begins with a historical overview of theory, methodology and research in the realm of media effects. The course continues with extensive survey of contemporary research about the role of media in facilitating changes in people and society, and consideration of possible explanations of how media effects occur. The course will conclude with discussion of possible ways to diminish socially undesirable media effects and enhance pro-social influence.

**COMM\_ST 274-0 Power in Entertainment (1 Unit)** How power is created, sustained, and challenged in entertainment media; how and why individuals, groups, and corporations achieve and maintain dominance in art, film, television, gaming, and digital and social media.

**COMM\_ST 275-0 Persuasive Images: Rhetoric of Popular Culture (1 Unit)** Analysis of image-making in all forms of popular culture-in film and television but also shopping malls, supermarkets, car dealers, and doctors' offices.

**COMM\_ST 276-0 The Construction of Value in Cultural Markets (1 Unit)** This course explores the dynamics of value creation in markets for symbolic goods. Why do people pay millions for a painting of one artist rather than another? Why do some brands become globally sought after, while others never make it beyond their national context? Students will be acquainted with key approaches to the study of cultural markets from a sociological perspective. They will learn, for example, about the significance of the status structure of cultural markets, of price signals, market classifications, the construction of meaning around market categories, the dynamics of branding for crossing national boundaries, or the influence of cultural critics and broader discourses for valuation processes. Each week, the course will be complemented with collaborative team discussions in which students will engage with a substantive case to learn how to connect theoretical concepts with illuminating empirical analysis.

**COMM\_ST 290-0 Forensics (1 Unit)** Independent research and analysis in conjunction with participation in intercollegiate forensics. Credit may not be earned for 290 more than once.

**COMM\_ST 294-0 First-Year Seminar (1 Unit)** Study in seminar format of a topic in communication. Assignments emphasize expository writing. *SOC First-Year Seminar*

**COMM\_ST 295-0 Topics in Communication Studies (1 Unit)** Reading, research, and discussion in areas of significance. Topics vary.

**COMM\_ST 298-0 Undergraduate Seminar (1 Unit)** Student or faculty initiated seminars to consider special topics. Credit for 298 may be earned more than once. No more than 2 units of such credit may be applied toward fulfillment of the major requirements.

#### **COMM\_ST 301-0 Current Issues in Privacy (1 Unit)**

The texture of interactions affecting privacy: government and workplace monitoring and surveillance, invasion of privacy by social media, disclosure to unintended Internet audiences, database aggregation, privacy and the person.

#### **COMM\_ST 302-0 Law of the Creative Process (1 Unit)**

Principles of copyright, contracts, and entertainment business practices from the perspective of the producer, artist, and creator.

#### **COMM\_ST 303-0 Communication and Misinformation (1 Unit)**

This course will explore the factors that make people vulnerable to misinformation and the reasons that corrections so often fail to change

their minds. We will also analyze how those tendencies are enhanced by media technologies and exploited by various stakeholders. In addition, we will consider possible remedies that could be employed to combat misperceptions. Finally, students will put knowledge into practice, by producing an original podcast episode in small groups.

**COMM\_ST 310-0 Rhetoric, Democracy & Empire in Classical Athens (1 Unit)** Students will read Thucydides' History of the Peloponnesian War along with texts in classical rhetoric to address perennial problems regarding the role of speech in a democratic society.

#### **COMM\_ST 314-0 Rhetoric and Public Commemoration (1 Unit)**

Public commemoration as a rhetorical phenomenon. Through discussion of scholarly literature and production of research papers, students investigate questions such as: How do societies remember the past? What do the strategies for remembering the past teach us about the present? How are 'collective memories' produced and challenged?

#### **COMM\_ST 315-0 Rhetoric of Social Movements (1 Unit)**

Study of traditional theories of opposition derived from sociological and rhetorical analyses of mass movements. Examines new social movements such as advocacy groups related to abortion, animal rights, feminism, and other local and national issues.

#### **COMM\_ST 317-0 Voice, Violence, and Democracy (1 Unit)**

Understanding how and why "democracy" has come to be regarded today as the only "legitimate" form of government; explored by examining alternative roads to modernity and democratic polity taken by different countries through the dialectic of voice (rhetoric) and violence in contemporary democracies.

#### **COMM\_ST 324-1 Rhetoric of U.S. Women's Rights, Colonial to 1920 (1 Unit)**

Students in this course investigate the early U.S. women's rights movement through the analysis of primary texts and the examination of critical essays. Students should expect to gain a complex and nuanced perspective on the rhetorical history of public advocacy by U.S. women, and also to improve their skills in critical reading and analysis.

#### **COMM\_ST 324-2 Rhetoric of U.S. Women's Rights, 1920-Present (1 Unit)**

Students in this course investigate the discourse of contemporary U.S. feminisms through the analysis of primary texts and the examination of critical essays. Students who complete the course successfully should expect to gain a complex and nuanced perspective on the rhetoric of U.S. feminisms and to improve their skills in critical reading and analysis.

**COMM\_ST 326-0 African American Rhetoric (1 Unit)** Survey of key texts of 20th century African American public discourse as well as a forum to discuss those texts and engage them analytically and critically.

#### **COMM\_ST 339-0 Health Communication and Precision Medicine (1 Unit)**

This applied course will provide you with a basic understanding of precision medicine and an in depth understanding of health communication theory and practice. Specifically, we will use precision medicine as a case in which to explore pertinent theories and principles of health communication such as complexity, risk, and uncertainty. By the end of this course, you should have an understanding of opportunities for communication scholarship to contribute to the advancement of precision medicine.

#### **COMM\_ST 340-0 Community Integration of Labeled People (1 Unit)**

Examination of local integration initiatives, the role of professionals, the language used to describe the initiatives, the social service system's responses, and the agents and communities that have constructed inclusive environments for people labeled with disabilities.

#### **COMM\_ST 341-0 Communication and Aging (1 Unit)**

Relationship between adult developmental processes and changes in communication behavior.

**COMM\_ST 342-0 The Experience of Chronic Illness: Body, Self, and Story (1 Unit)** This course is an introduction to social scientific models of the experience of illness, especially chronic illness. Chronic illnesses are the leading cause of death and disability in the U.S. and account for 86% of health care expenditures. Acute illness, trauma, and injury are important issues in healthcare, and we will touch on them briefly. But in the realm of human health, most of the major structural, systemic, cultural, financial, professional, emotional, and psychological challenges that face the American people and the US healthcare system center on chronic illness. The goal of the course is to equip students with a conceptual understanding of the experience of chronic illness, and a vocabulary for describing the experience of illness, so that they are better able to design, redesign and optimize healthcare systems and structures to better meet the needs of chronically ill people.

#### **COMM\_ST 344-0 Interpersonal Conflict (1 Unit)**

In-depth analysis of theories and research examining conflict within relationships. Special emphasis on conflict within friendships, dating relationships, and family.

Prerequisite: COMM\_ST 205-0.

#### **COMM\_ST 345-0 Family Communication (1 Unit)**

An overview of the family as a communication system. Intergenerational interaction patterns, intimacy and conflict patterns, decision making, environmental and cultural factors, and enrichment efforts. A wide range of family types and research methods are considered.

Prerequisite: COMM\_ST 241-0.

**COMM\_ST 350-0 Organizational Leadership (1 Unit)** This course enables students to think critically about leadership in organizations by understanding five facets of leadership. The five facets are areas of theorizing that explain what makes leadership effective: features, functions, form, fit, and focus. We will learn to answer questions about who is influential, what makes for good leadership, when (under what conditions?), and why (through what mechanisms?) is leadership successful. We explore leadership concepts using a set of illustrative case studies of interesting people who have led interesting lives of impact.

**COMM\_ST 350-SA Organizational Leadership (1 Unit)** This course enables students to think critically about leadership in organizations by understanding five facets of leadership. The five facets are areas of theorizing that explain what makes leadership effective: features, functions, form, fit, and focus. We will learn to answer questions about who is influential, what makes for good leadership, when (under what conditions?), and why (through what mechanisms?) is leadership successful. We explore leadership concepts using a set of illustrative case studies of interesting people who have led interesting lives of impact.

#### **COMM\_ST 351-0 Technology & Human Interaction (1 Unit)**

Understanding human interactions that take place both with and through technology; design, creation, and evaluation of technologies to support such interactions.

#### **COMM\_ST 352-0 Social Network Analysis (1 Unit)**

Use of social network analysis to understand the growing connectivity and complexity in the world around us on different scales, ranging from small groups to the web. How we create social, economic, and technological networks; how these networks enable and constrain our attitudes and behavior.

**COMM\_ST 352-SA Social Network Analysis (1 Unit)** Use of social network analysis to understand the growing connectivity and complexity

in the world around us on different scales, ranging from small groups to the web. How we create social, economic, and technological networks; how these networks enable and constrain our attitudes and behavior.

**COMM\_ST 353-0 Collaboration Technology (1 Unit)** Communication and behavior in groups; issues raised by collaborative use of communication and computing technologies. Topics include theories of group and organizational behavior, interpersonal awareness, privacy, trust, technology-mediated communication, and technology evaluation and adoption.

#### **COMM\_ST 355-0 Audience Analysis (1 Unit)**

Methods used to analyze electronic media audiences; emphasis on quantitative research techniques.

Prerequisites: COMM\_ST 201-0 (or equivalent); COMM\_ST 270-0.

#### **COMM\_ST 358-0 Algorithms and Society (1 Unit)**

Computing technologies play a role in an increasing percentage in our lives. They help to define the information we consume, the jobs that are available to us, and even our romantic partners. While these technologies bring us many benefits – more appealing information, better jobs – an increasing body of research suggests that they may also have critical negative side-effects or externalities. These externalities may be serious: some have attributed recent election outcomes and future massive-scale job loss to computing technologies (at least in part), even suggesting that we need a new “societal business model” [1]. In this course, we will first review and discuss this body of research. We will then shift towards developing potential solutions to these problems. Ultimately, my hope is that students who take this course will be better equipped to build technologies that are more likely to have a net positive effect on society.

**COMM\_ST 360-0 Theories of Organizational Communication (1 Unit)** Theories and research dealing with communication in formal organizations and institutions.

#### **COMM\_ST 363-0 Bargaining and Negotiation (1 Unit)**

Communication in bargaining and negotiation in organizational settings. Cognitive and motivational theories emphasizing bargaining and negotiation strategies.

#### **COMM\_ST 364-0 Collective Decision Making & Communication in Organizations (1 Unit)**

Research on how organizations make, communicate, and implement collective decisions. Assessing decision effectiveness, group decision making, leadership in organizations, and organizational design.

#### **COMM\_ST 365-0 Organizational Assessment (1 Unit)**

Advanced concepts and techniques for defining and analyzing organizational problems. Preparation for recognizing and working with problems in business organizations.

#### **COMM\_ST 367-0 Nonprofit Communication Management (1 Unit)**

Nongovernmental organizations and the campaigns they create. Examined through three interrelated modules: differentiating nongovernmental organizations from business and government organizations; issues they face that their government and business counterparts do not; nonprofit campaigns and public communication.

#### **COMM\_ST 370-0 Ethnographies of Culture (1 Unit)**

This course looks at ethnographies of artistic practice to better understand how culture is made, circulated, and received in social life.

**COMM\_ST 371-0 Cultural Analytics (1 Unit)** Big data is currency, to those initiated in the nuts and bolts of data science. This data literacy course introduces research on cultural markets, superstars, social media, and crowdsourcing, and provides you with tools to apply this research. You will learn how to plot and interpret graphs to measure performance in a cultural market; use Internet search data and Twitter conversations

to forecast trends; build, visualize, and analyze networks; and to train machine learning algorithms for prediction. Except an open mind, there are no prerequisites for the class. While formal thinking is encouraged, the course focuses on providing conceptual foundations and hands-on tools that apply across a variety of fields in communication, computer science, economics, life sciences, and sociology.

**COMM\_ST 372-0 Creativity in Context (1 Unit)** This course explores an intriguing problem in social scientific analysis: the production of new ideas and practices as well as the reputations of their creators: How do communication flows in social and cultural contexts affect creative output and innovations? How do professional communities collectively determine when ideas are original, instead of misguided or infeasible? How does this compare across the media, the arts, or the economy? Students will be acquainted with key approaches to creativity and innovation in sociology, communication studies, organizational analysis, urban studies, and economics. Through weekly assignments, students also will build important skills to develop an independent creative research project and gain insights for their future creative professional work. The course will involve brief lectures, student presentations, discussions, small group activities, and a collective interview with a creative expert.

**COMM\_ST 373-0 Environmental Art and Advocacy (1 Unit)** This course examines the use of visual and media arts for public advocacy regarding environmental concerns. We focus on advocacy groups using artistic works, practices, or techniques, and on artists shaping their work to inform and persuade the public.

**COMM\_ST 374-0 Interactive Museum Exhibit Design (1 Unit)** This course is for undergraduate students interested in the design of interactive museum exhibits. Students will engage with readings about the role museums play in public education and communication, how to design museum exhibits, the role technology can play in making museums interactive, and methods for evaluating learning and engagement at museum exhibits. Individual assignments will include analyzing and presenting on an existing museum exhibit and creating a design pitch for a novel museum exhibit. Students will work in groups towards the end of the quarter to develop an in-depth design and evaluation plan for a novel museum exhibit and, as the final project, create a paper prototype of the exhibit. No previous design or technology experience is needed for students to enroll in this course.

#### **COMM\_ST 375-0 The Sociology of Online News (1 Unit)**

Survey of sociological research on the production and consumption of online news.

**COMM\_ST 376-0 Contemporary Television (1 Unit)** Changes in the art and business of television with the introduction of new media. Production, storytelling, identity, and distribution of TV and web entertainment.

#### **COMM\_ST 378-0 Online Communities and Crowds (1 Unit)**

Examination of the types of collaborations that occur in online communities and crowds. Emphasis on sociological, economic, and political analysis of how and why largescale online collaborations work.

#### **COMM\_ST 380-0 Political Communication (1 Unit)**

Nature and functions of communication within established political institutions; decision making strategies, deliberative discourse, and electoral campaigns; field study of advocacy and interest groups. Prerequisites: COMM\_ST 220-0 and COMM\_ST 205-0.

**COMM\_ST 381-0 Media, Movements, & Social Change (1 Unit)** Social movements are formed through communication and it is through communication that they achieve much of their strategic objectives. This course explores the complex relationships between communication

and social movements, bringing together theories from communication studies, sociology, and political science, as well as tracing historically how social movements have developed new practices of achieving social change. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

#### **COMM\_ST 383-0 Media, Communication, and Environment (1 Unit)**

Exploring, understanding, and researching questions and issues related to the environment and climate through the study of media and communication.

#### **COMM\_ST 386-0 Science, Technology, and Society (1 Unit)**

Examination of developments in information and communication technology in the larger context of American science and technology since 1900.

Prerequisite: previous coursework on the historical or social dimensions of information and communication technology.

**COMM\_ST 387-0 Critical Internet Studies (1 Unit)** This course focuses on current issues in the field of Critical Internet Studies, with special attention directed to power dynamics related to the structures, designs, and uses of internet-related technologies. We will touch on the economic, political, social, and cultural significance of the internet, and work to analyze how existing oppressive power dynamics relating to racism, gender-based violence, and other forms of discrimination are entwined in various media issues. Readings focus on timely topics (e.g., memes, platform politics, misinformation, surveillance, algorithmic bias, tech and social justice, and more) across internet-related media and from historical, transnational, and multiple methodological perspectives. We will dig into the tension between commercial interests and creative uses of internet-related technologies. This class offers an opportunity to discuss the internet in a fundamental way. The seminar format allows students to engage with complex ideas, and to develop and refine critical thinking, verbal, and writing skills in an interactive and collective way.

#### **COMM\_ST 388-0 Internet and Society (1 Unit)**

The social, cultural, political, and economic implications of information technologies.

#### **COMM\_ST 389-0 Practicum in Communication Research (1 Unit)**

Collaboration with a faculty member on design and execution of a communication research project. Students learn how to complete a research project and write a report.

#### **COMM\_ST 390-0 Children's Culture (1 Unit)**

Examination of children's media from psychological, sociological, historical, and other perspectives. Discussion of the role of media in children's development.

#### **COMM\_ST 392-0 Global Culture, Commerce and Communication (1 Unit)**

Examination of current topics and events to familiarize students with the cultural dimensions of globalization and the critical importance of culture and communication in understanding the globalized world.

#### **COMM\_ST 394-0 Communication Studies Research Seminar (1 Unit)**

Small seminars in research topics led by different members of the department faculty. Students complete a research paper on a topic related to the seminar theme. Prerequisite: COMM\_ST 294-0.

#### **COMM\_ST 395-0 Topics in Communication Studies (1 Unit)**

Reading, research, and discussion in areas of significance. Topics vary.

#### **COMM\_ST 395-SA Topics in Communication Studies (1 Unit)**

Reading, research, and discussion in areas of significance. Topics vary.

#### **COMM\_ST 397-0 Honors Seminar (1 Unit)**

Students work on a 2-to 3-quarter project, culminating in a senior thesis, with the guidance of a faculty adviser. Upon successful completion a student is eligible to

graduate with departmental honors. Students receive 2 units of 397 Senior Honors Thesis credit for completing the thesis.

**COMM\_ST 398-0 Undergraduate Seminar (1 Unit)** Student or faculty initiated seminars to consider special topics. Credit for 398 may be earned more than once. No more than 2 units of such credit may be applied toward fulfillment of the major requirements.

**COMM\_ST 399-0 Independent Study (1 Unit)** Enrollment only by petition in advance.

## Communication Studies Major

The Department of Communication Studies offers courses that explore the major media, practices, and problems of a communication-intensive society. Topics include—but are not limited to—bargaining and negotiation, collective decision making, organizational innovation, human-computer interaction, Internet use, popular culture, social movements, and the history of political discourse in the United States. Students work with scholarship from the humanities and the social sciences, and coursework emphasizes the analytical and ethical requirements of responsible scholarship.

Students majoring in Communication Studies select one (or more) of the following areas of study to emphasize a specialty within the field:

- Creative Industries & Markets
- Digital Media: Behavior & Design
- Health Communication
- Media, Publics & Culture
- Strategic & Organizational Communication

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Major Requirements (12 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

### Introductory Courses (3 units)

- Introductory courses to be completed in the first year of studies in the major:

Course	Title
COMM_ST 101-1	Communication in Context: Introduction
COMM_ST 101-2	Communication in Context: Analysis & Research
COMM_ST 102-0	Public Speaking

### 200-Level Courses (3 units)

- Any 3 200-level courses, ideally to be completed before the end of the sophomore year because the material covered is helpful in more advanced courses.

### Advanced Courses (6 units)

- 6 additional communication studies courses at the 300 level, which may include one unit of the CMN 340-0 EPICS Internship Seminar.
- No more than 1 unit of the following courses may be included in these 6 courses for the major. (Additional courses can be applied as electives.)

Course	Title
CMN 340-0	School of Communication EPICS Internship Seminar
COMM_ST 389-0	Practicum in Communication Research
COMM_ST 397-0	Honors Seminar
COMM_ST 398-0	Undergraduate Seminar
COMM_ST 399-0	Independent Study

### Areas of Study

Students must complete at least one area of study consisting of 4 courses: 1 foundational 200-level course and 3 additional courses. These courses count toward the 200-level and advanced courses requirements above. Courses that are listed in two areas of study are allowed to be applied to both.

### Creative Industries & Markets

Course	Title
1 of the following foundational courses:	
COMM_ST 225-0	Communication and Culture
or COMM_ST 274-0	Power in Entertainment
Plus, 3 of the following courses:	
COMM_ST 255-0	Understanding Media Markets: Users, Makers and Metrics
COMM_ST 276-0	The Construction of Value in Cultural Markets
COMM_ST 295-0	Topics in Communication Studies (Approved Topics Include: The Public Image)
COMM_ST 302-0	Law of the Creative Process
COMM_ST 370-0	Ethnographies of Culture
COMM_ST 371-0	Cultural Analytics
COMM_ST 372-0	Creativity in Context
COMM_ST 374-0	Interactive Museum Exhibit Design
COMM_ST 375-0	The Sociology of Online News
COMM_ST 376-0	Contemporary Television
COMM_ST 392-0	Global Culture, Commerce and Communication

### Digital Media: Behavior & Design

Course	Title
1 of the following foundational courses:	
COMM_ST 227-0	Communication & Technology
or COMM_ST 270-0	Media Effects
Plus, 3 of the following courses:	
COMM_ST 221-0	Media & Publics Across Cultures
COMM_ST 301-0	Current Issues in Privacy
COMM_ST 303-0	Communication and Misinformation
COMM_ST 351-0	Technology & Human Interaction
COMM_ST 352-0	Social Network Analysis
COMM_ST 358-0	Algorithms and Society
COMM_ST 374-0	Interactive Museum Exhibit Design
COMM_ST 378-0	Online Communities and Crowds
COMM_ST 386-0	Science, Technology, and Society
COMM_ST 387-0	Critical Internet Studies
COMM_ST 388-0	Internet and Society
COMM_ST 395-0	Topics in Communication Studies Approved topics include Information Visualization and Social Media, Technology & Mental Health

### Health Communication

Course	Title
1 of the following foundational courses:	
COMM_ST 241-0	Theories of Relational Communication

or COMM_ST 246-0	Intro to Health Communication
Plus, 3 of the following:	
COMM_ST 205-0	Theories of Persuasion
COMM_ST 270-0	Media Effects
COMM_ST 248-0	Black Feminist Health Science Studies
COMM_ST 263-0	Risk Communication
COMM_ST 303-0	Communication and Misinformation
COMM_ST 339-0	Health Communication and Precision Medicine
COMM_ST 340-0	Community Integration of Labeled People
COMM_ST 341-0	Communication and Aging
COMM_ST 342-0	The Experience of Chronic Illness: Body, Self, and Story
COMM_ST 345-0	Family Communication
COMM_ST 373-0	Environmental Art and Advocacy
COMM_ST 383-0	Media, Communication, and Environment
COMM_ST 395-0	Topics in Communication Studies

(Approved topics include: Social Media, Technology & Mental Health, Psychedelic Medicine)

### Media, Publics & Culture

Course	Title
1 of the following foundational courses:	
COMM_ST 215-0 or COMM_ST 221-0	Principles of Rhetorical Criticism Media & Publics Across Cultures
Plus, 3 of the following courses:	
COMM_ST 228-0	AfroFeministFutures
COMM_ST 275-0	Persuasive Images: Rhetoric of Popular Culture
COMM_ST 295-0	Topics in Communication Studies
(Approved topics include: The Public Image)	
COMM_ST 310-0	Rhetoric, Democracy & Empire in Classical Athens
COMM_ST 314-0	Rhetoric and Public Commemoration
COMM_ST 315-0	Rhetoric of Social Movements
COMM_ST 317-0	Voice, Violence, and Democracy
COMM_ST 324-1	Rhetoric of U.S. Women's Rights, Colonial to 1920
COMM_ST 324-2	Rhetoric of U.S. Women's Rights, 1920-Present
COMM_ST 326-0	African American Rhetoric
COMM_ST 373-0	Environmental Art and Advocacy
COMM_ST 380-0	Political Communication
COMM_ST 381-0	Media, Movements, & Social Change
COMM_ST 383-0	Media, Communication, and Environment

### Strategic & Organizational Communication

Course	Title
1 of the following foundational courses:	
COMM_ST 205-0 or COMM_ST 261-0	Theories of Persuasion Introduction to Strategic Communication
Plus, 3 of the following courses:	
COMM_ST 250-0	Team Leadership and Decision Making
COMM_ST 263-0	Risk Communication
COMM_ST 295-0	Topics in Communication Studies
(Approved topics include: Ethics & Organizational Social Responsibility)	
COMM_ST 344-0	Interpersonal Conflict
COMM_ST 350-0	Organizational Leadership
COMM_ST 352-0	Social Network Analysis
COMM_ST 353-0	Collaboration Technology
COMM_ST 355-0	Audience Analysis
COMM_ST 360-0	Theories of Organizational Communication
COMM_ST 363-0	Bargaining and Negotiation

COMM_ST 364-0	Collective Decision Making & Communication in Organizations
COMM_ST 365-0	Organizational Assessment
COMM_ST 367-0	Nonprofit Communication Management
COMM_ST 378-0	Online Communities and Crowds
COMM_ST 380-0	Political Communication

## School Requirements (1 unit)

### First-Year Seminar (1 unit):

Course	Title
CMN 101-0	SoC First Year Seminar: Interdisciplinary Topics in Communication Arts & Sciences

### SoC Capstone

This requirement can be fulfilled by a combination of 398-1 and 398-2. Other courses may be appropriate as substitutions for CMN 398-1 and/or CMN 398-2. Students may consult with their SoC academic advisor if they have questions about appropriate substitutions.

Course	Title
CMN 398-1	SoC Capstone: Lecture
CMN 398-2	SoC Capstone: Lab

## Additional Requirements (29 units)

### Distribution Requirements (18 units)

18 units of credit outside the department, including 3 units of credit from each of the three School of Communication distribution areas: science, mathematics, and technology; individual and social behavior; and humanities and fine arts.

### Electives (11 units)

Electives in communication and other areas to complete a minimum of 42 units of credit.

### Concentration Outside the School of Communication

A field of concentration outside the School of Communication (normally one of the disciplines of the Weinberg College of Arts and Sciences), consisting of at least 6 units of credit; of these 6, at least 3 must be 300- or 400-level courses. A non-School of Communication major or minor, a dual degree program, and many certificate programs satisfy this requirement. Courses taken to satisfy the field of concentration requirement may fulfill distribution or elective course requirements.

### Language Requirement

Proficiency in a classical or modern foreign language equivalent to the work covered in a second-year college-level course (proficiency is established in precisely the same manner as in the Weinberg College of Arts and Sciences; see foreign language requirements (p. 216)).

Courses taken to satisfy the language requirement may fulfill distribution or elective course requirements.

## Honors in Communication Studies

The Undergraduate Honors Program in Communication Studies offers an opportunity for highly motivated Communication Studies majors to conduct original scholarly research. Each student works closely with faculty to produce an original research project in an interest area determined by the student. Seniors who successfully complete the program will be eligible to graduate with departmental honors. Also see Honors and Prizes in Graduation Honors (p. 25).

## Dance

The Dance Program is housed in the Department of Theatre (p. 95), which offers both a **Dance Major** (p. 102) and a Dance Minor (p. 103).

## Human Communication Sciences

See Communication Sciences and Disorders (p. 77).

## Performance Studies

<https://communication.northwestern.edu/academics/performance-studies/index.html> (<https://communication.northwestern.edu/academics/performance-studies/>)

The Department of Performance Studies advances the study and making of performance, which we locate in creative processes, lived experience, change-making, and the pursuit of embodied knowledge. We approach performance from three major perspectives: we analyze creative works onstage, backstage, and in everyday life; we study social and cultural practices through the bold, critical lens of performance theory; and we conduct and present our research inquiries through creative processes as well as talks and publications.

Our undergraduate curriculum fosters complex understandings of what performance is, and its effects in and as social life, by supporting student growth in the following learning outcomes:

- **Creative Process:** Experiment with creative practices informed by critical analysis
- **Performance Analysis:** Analyze how societies are constructed through acts of performance
- **Performance Research:** Conduct research by utilizing methods and materials relevant to the field of performance studies
- **Cultural Competence:** Recognize biases across societies worldwide through performance-based inquiry
- **Professional Experience:** Participate in artistic projects on and beyond campus

Performance studies majors and minors are successful in bringing their critical thinking, analytic, and creative skills to the many professions and industries that play with big ideas and embrace the uncategorizable. Our graduates go on to careers in the creative arts, museums, galleries, arts organizations, academia, advertising/marketing, digital and legacy media, entertainment, law, journalism, hospitality, and much more. Our students expand and challenge boundaries, animate text, and authenticate lived experience— essential skills for any career.

## Programs of Study

- Performance Studies Major (p. 89)
- Performance Studies Minor (p. 90)

## Learning Objectives

Students should be able to...

- Experiment with creative practices informed by critical analysis
- Analyze how societies are constructed through acts of performance
- Conduct research by utilizing methods and materials relevant to the field of performance
- studies

- Recognize biases across societies worldwide through performance - based inquiry
- Participate in artistic projects on and beyond campus

## Courses

**PERF\_ST 101-0 Modes of Performance (1 Unit)** Introduction to performance as a concept, embodied practice, and as a critical methodology. We will cover the various ways performance has been conceived over time; various approaches to acting; various performance styles; and various ways of using performance to analyze literary and non-literary texts. Students will do both solo and group performances each week and write critical essays on performance. *Literature and Arts Foundational Discipline*

**PERF\_ST 103-0 Analysis and Performance of Text (1 Unit)** This course studies texts, broadly defined and situated, through performance. Students explore how performance helps the performer and audience interpret a text, as well as express challenging political and personal themes. They examine the ways performance illuminates and draws out deeper understandings of social relations through embodied praxis. *Literature Fine Arts Distro Area*

**PERF\_ST 119-0 Production Laboratory (0 Unit)** Registration for performance studies majors fulfilling production crew requirements. Students perform duties for run crews and house crews in connection with department-sponsored productions in the Krause Performance Lab of Annie May Swift Hall.

**PERF\_ST 200-0 Introduction to Performance Studies (1 Unit)** Explores fundamental themes and debates that animate the field, introducing a range of ways of theorizing, conceptualizing, studying, and making performance. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PERF\_ST 203-0 Performance Culture and Communication (1 Unit)** Explores how live performance and dramatic forms of communication are methods used to examine social behavior and cultural expressions.

**PERF\_ST 210-1 Performance of Poetry (1 Unit)** Introduction to the analysis and performance of poetry. Prerequisite: PERF\_ST 103-0 or equivalent.

**PERF\_ST 210-2 Performance of Narrative Fiction (1 Unit)** Introduction to the study of narrative performance. Prerequisite: PERF\_ST 103-0 or equivalent.

**PERF\_ST 220-0 Sound Cultures (1 Unit)** Introduction to ways of thinking culturally and historically about sound and listening. Students learn to describe, contrast, and analyze sound cultures over a wide geographical and chronological range. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PERF\_ST 225-0 Black Music Studies (1 Unit)** This course introduces students to specific topics in the field of Black Music Studies that range from American gospel music and jazz to the question of how Black sound and performance gestate in everyday life, locally and transnationally. Students will engage with the complex socio-political dynamics that have historically shaped music in Black spaces as well as the role of Black and Afro-diasporic musical practices in shaping sono-musical cultures worldwide. No prerequisites. Specific topics and approaches to be determined by individual instructor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**PERF\_ST 230-0 Food and Performance (1 Unit)** A critical engagement with food as a performance medium. This course explores food in its embodied, material, symbolic and evocative potential in historical,

fictional, ethnographic and journalistic writings, as well as poetry, memoirs, cookbooks, selected films, plays, performances, music, visual and performance art. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PERF\_ST 250-0 Topics in Performance Studies (1 Unit)** Readings, discussion, and creative work in performance studies research and artistic practice. Topics vary. May be repeated for credit.

**PERF\_ST 300-0 Movement Based Performance (1 Unit)** Movement laboratory exploring theories and techniques of movement for performance, including dance, physical theatre, and framed quotidian action. Introduction to leading practitioners and practices in movement training, choreography, and composition.

**PERF\_ST 301-0 Performance and Activism in Digital Culture (1 Unit)** Exploration of the intersection between performance and digital media as tools for activism. Includes practices of hacktivism, counter-surveillance, locative media activism, and networked protest. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PERF\_ST 302-0 Art and Performance in Asian America (1 Unit)** Introduction to the arts and performance of Asian America, including popular culture, performance art, theatre, and dance. Overview of current practices in Asian American aesthetic criticism.

**PERF\_ST 303-0 Transnational Flows of Performance (1 Unit)** Exploration of how transnationalism and globalization challenge the concept of modern nation-states as bounded territories, identities, and cultures by considering how social actors negotiate these processes through performance as an embodied, in situ-cultural practice. *Literature Fine Arts Distro Area*

**PERF\_ST 304-0 Sonic Practices of the Middle East and North Africa (1 Unit)** Sonic and musical practices and ritual in the Middle East and North Africa in relation to modernity, transnationalism, political economy, and performance. *Literature Fine Arts Distro Area*

**PERF\_ST 305-0 Performance Theory (1 Unit)** Introduction to theoretical approaches that animate performance studies, including Marxism, psychoanalysis, deconstruction, postcolonial theory, critical race theory, feminist theory, and queer theory. *Literature Fine Arts Distro Area*

**PERF\_ST 306-0 Performance and Race (1 Unit)** An exploration of the field of performance studies as it interrogates the relationship between race and performance. Anchoring each class in the work of artists who engages the medium of performance, we explore the ways in which race is performed and performative. Performance works by black, brown, Asian, and indigenous artists will anchor understandings of race and racism.

**PERF\_ST 307-0 Performance in Latin America (1 Unit)** This course provides an overview of artistic, quotidian, and activist performance practices in Latin America. Students will engage performance practice as an object of study, analytic framework, and communication medium in order to develop their own work in dialogue with the course themes and contexts.

**PERF\_ST 308-0 Contemporary Middle Eastern Performance (1 Unit)** This seminar examines embodied cultural practices across the Middle East and North Africa, with particular attention to music, dance, theater, and popular culture. Spanning the late nineteenth century to the Arab Spring, students will better understand a cultural history of the region, its role in shaping global modernity, and the politics of gender, sexuality, and ethnoreligious difference. *Global Perspectives on Power, Justice, and Equity Literature and Arts Foundational Discipline*

**PERF\_ST 309-0 Black Performance (1 Unit)** Exploration of black performance traditions; introduction to various schools of thought regarding black performance.

**PERF\_ST 310-0 Performing Africa (1 Unit)** This course invites students to imagine themselves as creators and curators, rather than as passive consumers or critics, of African images. We will engage storytelling, photography, devised theater, and movement as creative strategies with which to probe the idea of Africa; and explore historical and contemporary discourses that underpin ideas about Africa in the West. *Literature and Arts Foundational Discipline*

**PERF\_ST 312-0 Yoga: Practice, History, and Politics (1 Unit)** This course combines yoga practice with critical inquiry to engage the global phenomenon of yoga as performance, industry, philosophy, and culturally contested zone. We will study the historical and social processes that shaped the historic transformation of yoga from a 5,000 year-old South Asian tradition into a modern cultural form.

**PERF\_ST 313-0 Documentary Theater and Performance (1 Unit)** This practice-based course focuses on the historical and theoretical foundations of documentary theatre and performance. Through case studies we will explore the poetics and politics of the genre. Students will devise their own documentary pieces based on interviews, personal narratives, and archival records of their choosing.

**PERF\_ST 315-0 Non-Fiction Studies (1 Unit)**

Exploration of the dramatic impulse in nonfiction texts. Emphasis on autobiographical one-person shows.

**PERF\_ST 316-0 Folklore and Oral Traditions (1 Unit)**

Genres of oral literature and an introduction to the methods and aims of folklore research. The nature of verbal art as performance and the importance of cultural context.

**PERF\_ST 317-0 Feminist Performance (1 Unit)** This seminar focuses on the analytics and practice of intersectional, queer, and trans-feminist performance through a selection of key scholarly, artistic, and activist works. Pursuing what a feminist performance practice is and what it does, we will develop critical readings and hands-on experiments that follow feminist strategies in response to issues like gender-based violence, dissident identities, and collective emancipation.

**PERF\_ST 318-0 Performing Masculinities (1 Unit)** This course will examine the ways in which masculinity is represented in popular culture, theoretical discourse, and live performance. Assuming that gender is made and not given, the course will challenge the assumption that only "men" are creators, performers, and producers of masculinity. We will also examine the ways in which race, class, and sexuality alter tropes of masculinity.

**PERF\_ST 319-0 Queer and Trans of Color Critique (1 Unit)** This class explores the development of queer of color and trans of color critique, their relationship to each other and to the realm of performance and performance studies. In addition to engaging with the traditions of queer and trans of color critique, the course will explore queer and trans of color performance practice as a site of theoretical praxis.

**PERF\_ST 321-0 Performance, Sex, and Censorship (1 Unit)** This seminar pursues the central issues that animated the "culture wars" in the United States since the 1980s, such as artistic expression, censorship, sex and sexuality, gender, race, reproductive choice, and religion. It focuses the history of performance, art, and censorship in the contemporary US, as well as the relevant first amendment law that accompanies much of this history.

**PERF\_ST 322-0 Museums and Cultural Collections (1 Unit)** A look at museums as sites and practices of performance. This course focuses

on how museums have historically collected, exhibited, and programmed around objects, images, plants, and, at times, human and non-human animals. We will explore the history of collections in libraries, cultural centers, museums and other archives. The course includes significant site visits to Chicago museums and collections.

**PERF\_ST 323-0 Performing Popular Music (1 Unit)** This course approaches the study of popular music practices, discourses, and worldmaking from the perspective of performance studies, with its attendant focus on the role of embodiment, social and cultural difference, and practice-based research.

#### **PERF\_ST 324-1 Presentational Aesthetics (1 Unit)**

Theatrical convention, presentational mode, and conscious artifice in the performance of dramatic literature, poetry, and nonfiction.

**PERF\_ST 325-0 Adaptation: Writing and Staging (1 Unit)** This is a course in the fundamentals of adapting an existing, non-dramatic text (such as a novel, short story, memoir, non-fiction of all kinds, poetry, etc.) into a theatrical event. We will focus on all the issues involved in moving a story from one mode of address to another: direct and indirect discourse, voice, the implied author, compression, how time works differently for the reader vs. the spectator, and narrative and what to do about it; as well as replacing text with image, inventing dialogue, and staging the impossible. Some texts will be assigned, but primarily students will work with print texts of their own choosing. Students will have many small exercises in both writing and staging; and work towards a “big project” – the completion of a significant part of their own adaptation. The course could be of interest to anyone interested in directing or creating plays from non-dramatic source texts.

#### **PERF\_ST 326-1 Performance Art (1 Unit)**

History, development, and theories of performance art as a live-art genre from the modernist avant-garde to contemporary cross-cultural forms. Media in all forms, with emphasis on performance process and audience relationship.

#### **PERF\_ST 327-0 Performance Ethnography (1 Unit)**

Ethnographic approaches to the field of performance studies, including the theoretical foundations of performance ethnography and methodological approaches to its performance.

#### **PERF\_ST 330-0 Topics in Performance Studies (1 Unit)**

Readings, discussion, and creative work in performance studies research and artistic practice. Topics vary. May be repeated for credit.

#### **PERF\_ST 331-0 Field Study/Internship in Performance Studies (1-4 Units)**

Intensive participation in off-campus production and/or field research experience. Departmental approval required.

#### **PERF\_ST 335-0 Social Art Tactics (1 Unit)**

Exploration of historical and theoretical foundations of social art practice, including work focused on social change in such genres as performance, digital media, relational art, and photography. Performance/art workshops; development of performance-based interventions.

#### **PERF\_ST 336-0 Latino/a Performance (1 Unit)**

Exploration of US Latina/o literature through narratives of migration, annexation, exile, and diaspora; focus on the arrival and development of Latina/o performance traditions in the United States.

**PERF\_ST 338-0 Autobiographical Performance (1 Unit)** In this process-oriented class, students will spend ten weeks analyzing a variety of autobiographical performances and developing solo performance pieces. Students will learn how to create a performance and move from the personal to the universal by pulling inspiration from personal experiences, family archives, and canonical performance art pieces. Students will

also learn and practice methods for giving and receiving thoughtful and consensual critical feedback.

**PERF\_ST 340-0 Performance and Technology: Composition Workshop (1 Unit)** In this course students will use basic mechatronics to create compelling movement-based performances. The course will involve workshop exploration of technologies embedded in performance: robots, media, computer interface. Students will create performance projects and discuss theoretical and historical implications of technologies in performance. Hands-on making and engineering workshops will be incorporated to develop skills in technological crafts such as circuit design and fabrication, toward technologically enhanced performance.

**PERF\_ST 399-0 Independent Study (1 Unit)** Prerequisite: consent of undergraduate dean after submission of petition.

## **Performance Studies Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Major Requirements (12 units)**

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

#### **Introductory Courses (2 units)**

Choose 2:

Course	Title
PERF_ST 101-0	Modes of Performance
PERF_ST 200-0	Introduction to Performance Studies
PERF_ST 203-0	Performance Culture and Communication

#### **Advanced Courses (2 units)**

A minimum of 2 other 200-level courses in the department, chosen from:

Course	Title
PERF_ST 210-1	Performance of Poetry
PERF_ST 210-2	Performance of Narrative Fiction
PERF_ST 220-0	Sound Cultures
PERF_ST 225-0	Black Music Studies <sup>1</sup>
PERF_ST 230-0	Food and Performance
PERF_ST 250-0	Topics in Performance Studies

#### **Production Courses (0 units)**

Course	Title
PERF_ST 119-0	Production Laboratory (1 quarter)
or	
One performance studies course with a studio lab component (minimum 20 lab hours per term). Consult with your academic advisor for lab component options.	

#### **Additional Courses (8 units)<sup>2</sup>**

Course	Title
1 course chosen from the following to fulfill the departmental diversity requirement:	
PERF_ST 225-0	Black Music Studies <sup>1</sup>
PERF_ST 302-0	Art and Performance in Asian America
PERF_ST 303-0	Transnational Flows of Performance
PERF_ST 304-0	Sonic Practices of the Middle East and North Africa
PERF_ST 306-0	Performance and Race

PERF_ST 307-0	Performance in Latin America
PERF_ST 308-0	Contemporary Middle Eastern Performance
PERF_ST 309-0	Black Performance
PERF_ST 312-0	Yoga: Practice, History, and Politics
PERF_ST 317-0	Feminist Performance
PERF_ST 318-0	Performing Masculinities
PERF_ST 319-0	Queer and Trans of Color Critique
PERF_ST 336-0	Latino/a Performance
<b>5 additional 300- or 400-level courses in the department<sup>3</sup></b>	
<b>2 additional performance-focused courses from any department in the School of Communication</b>	

- <sup>1</sup> A single enrollment in PERF\_ST 225-0 cannot double count for **Advanced Courses and Diversity Requirement**. Multiple enrollments with different topics can be used.
- <sup>2</sup> No more than 2 units of PERF\_ST 399-0 Independent Study and 1 unit of PERF\_ST 331-0 Field Study/Internship in Performance Studies may apply toward this requirement
- <sup>3</sup> No more than 1 unit of either PERF\_ST 399-0 Independent Study or PERF\_ST 331-0 Field Study/Internship in Performance Studies may apply toward this 5-course requirement

## School Requirements (1 unit)

### First Year Seminar

Course	Title
CMN 101-0	SoC First Year Seminar: Interdisciplinary Topics in Communication Arts & Sciences

### SoC Capstone

This requirement can be fulfilled by a combination of CMN 398-1 and CMN 398-2. Other courses may be appropriate as substitutions for CMN 398-1 and/or CMN 398-2. Students may consult with their SoC academic advisor if they have questions about appropriate substitutions.

Course	Title
CMN 398-1	SoC Capstone: Lecture
CMN 398-2	SoC Capstone: Lab

## Additional Requirements (29 units)

### Distribution Requirements (18 units)

18 courses outside the school, including 2 from science, mathematics, and technology; 3 from individual and social behavior; and 3 from humanities and fine arts. In addition, 6 courses must be at the 200 level or above.

### Electives (11 units)

Electives in communication and other areas to complete a minimum of 42 units of credit.

## Honors in Performance Studies

Performance Studies majors may apply to participate in the Departmental Honors Program in their junior year. The Honors Program is intended to provide highly qualified students an opportunity to complete a substantial research investigation into a creative and/or academic project; to introduce students to graduate-level, faculty-mentored research; and to provide formal honorary recognition to students who have excelled in course work and independent research activity. More information is available on the department Honors & Prizes page (<https://communication.northwestern.edu/academics/performance-studies/undergraduate-programs/major-performance-studies.html#tab-panel3>).

[communication.northwestern.edu/academics/performance-studies/undergraduate-programs/minor-performance-studies.html](https://communication.northwestern.edu/academics/performance-studies/undergraduate-programs/minor-performance-studies.html)

## Performance Studies Minor

<https://communication.northwestern.edu/academics/performance-studies/undergraduate-programs/minor-performance-studies.html>

The minor in performance studies offers training for students interested in pursuing the theories, methodologies, and techniques of performance to develop artistic and/or scholarly work in other primary disciplines across the University.

## Minor Requirements (7 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor.

### Introductory Courses (2 units)

Choose 2:

Course	Title
PERF_ST 101-0	Modes of Performance
PERF_ST 200-0	Introduction to Performance Studies
PERF_ST 203-0	Performance Culture and Communication

### Additional Courses (5 units)

5 additional courses, of which at least 3 must be in the performance studies department. The remaining 2 courses may come from outside departments or related disciplines (as approved by the director of undergraduate studies).

## Radio/Television/Film

<https://communication.northwestern.edu/academics/radio-television-film/index.html> (<https://communication.northwestern.edu/academics/radio-television-film/>)

The Department of Radio/Television/Film offers education in the history, theory, and production of media. Broad-based and interdisciplinary in orientation, the department offers a range of perspectives on media forms from cinema to broadcast and cable television to alternative media to emerging technologies. Courses emphasize that media are social and cultural practices in dialogue with the broader context of the humanities. The department is dedicated to integrating theory and practice, creating intersections with other disciplines, and fostering cutting-edge media production. Originality, critical analysis, and vision are valued in both scholarly research and creative work. The department's goal is to educate students and citizens to critically interpret contemporary media, envision alternative structures in theory and practice, and reinvent the media of the future.

Production facilities include 16mm film and HD equipment, sound stage, and editing suites; advanced audio postproduction; and state-of-the-art computer graphics. Students operate the 7,200-watt FM radio station WNUR, which serves the Chicago area and also broadcasts on the Internet. The School of Communication funds multiple active student-run cocurricular production groups and offers students opportunities for internships at television and radio stations and production companies in

the Chicago, New York, and Los Angeles areas. Frequent guest lectures are offered by alumni with careers in media and by other well-known professionals.

## Programs of Study

- Film and Media Studies Minor (p. 93)
- Game Design + Media Arts + Animation Minor (p. 94)
- Radio/Television/Film Major (p. 94)
- Sound Design Minor (p. 95)

## Learning Objectives

Undergraduate majors in Radio/Television/Film become fluent in the production of media, the critical and cultural analysis of media, and the craft of writing for the media. They receive hands-on training in filming, editing, directing, producing, and writing for a range of media forms, including films, television, animation, soundtracks, audiovisual installations, video games, and new media. They examine media cultures around the world and throughout history to situate media production in social, economic, and political context. Honing their skills, students develop unique voices through media production and screenwriting, informed by a comprehensive, critical study of the culture and history of film, television, sound media, and digital media.

Courses in the Department of Radio/Television/Film are designed to achieve a combination of the following learning outcomes:

- Understand and describe the cultural, historical, aesthetic, economic, ethical, and political factors influencing contemporary media arts;
- Compare, critique, and assess diverse styles and traditions of media production across time and from multiple cultural and national contexts, drawing upon multiple theoretical and methodological approaches;
- Demonstrate competency in writing and creating media in multiple styles, genres, and modes of production;
- Create original media works that demonstrate a distinctive artistic voice;
- Integrate skills in writing, storytelling, production, and analysis to develop innovative and original approaches to research and practice in media.

## Courses

**RTVF 190-0 Media Construction (1 Unit)** Introduces the core components of media-idea, image, sound, and sequence- with the technical fundamentals involved in shooting and editing video. Students work with SLR and digital video cameras and with Photoshop and Final Cut Pro editing software, completing four projects in different genres during the quarter. Prerequisite for all upper-level production courses. Required for majors; typically taken in first year.

**RTVF 202-0 First-Year Topics Seminar (1 Unit)** Beginning seminar focused around a special topic of media analysis, history, or theory. Students will learn research, analytic, and writing skills while focusing on issues relevant to film, media and/or digital arts and culture. *SOC First-Year Seminar*

**RTVF 220-0 Analyzing Media Texts (1 Unit)** Introduction to the study of the moving image. Basic elements of style across media including film, television, and interactive media. Focus on close analysis of texts to find significance. Prerequisite for upper level courses in the department.

Required for majors; typically taken in first year. *Literature Fine Arts Distro Area*

**RTVF 260-0 Foundations of Screenwriting (1 Unit)** Introduction to writing for the screen (film, television, and/or computer). Structure, character, dialogue, format, voice, scope, pace, context. Lecture/workshop. Prerequisite for upper-level writing courses in the department.

**RTVF 298-0 Studies in Media Topics (1 Unit)** Theoretical or practical or both; emphasis on evolving trends.

**RTVF 310-0 Television History (1 Unit)**

Political, cultural, social, and industrial history of television, from the classic network era to the post-network contemporary period of media convergence. Exploration of programs as well as major events and shifts in television history.

*Historical Studies Distro Area*

**RTVF 312-1 History of Film I (1 Unit)**

International survey of motion pictures as a distinctive medium of expression from its prehistory to the present.

*Literature Fine Arts Distro Area*

**RTVF 312-2 History of Film II (1 Unit)**

International survey of motion pictures as a distinctive medium of expression from its prehistory to the present.

*Literature Fine Arts Distro Area*

**RTVF 313-1 Doc Film History & Criticism (1 Unit)**

Survey of the schools, styles, and purposes of documentary film as a unique form of artistic expression and sociopolitical persuasion.

*Literature Fine Arts Distro Area*

**RTVF 313-2 Documentary Film & Video (1 Unit)**

Contemporary work and issues in documentary film and video.

*Literature Fine Arts Distro Area*

**RTVF 314-0 History of the Recording Industry (1 Unit)**

Exploration of the history of the recording industry from the invention of the phonograph in 1877 to recent developments in digital audio.

**RTVF 315-0 Audio Drama (1 Unit)**

Introduction to masterpieces of audio and radio drama in three historical periods: classic American (1937-54); mid-century British (1954-1974) and contemporary global traditions.

**RTVF 316-0 Media and Cultural Theory (1 Unit)**

Introduction to the critical analysis of film, television, and other popular media by surveying influential theories of media, culture, and power.

**RTVF 321-0 Radio/Tv/Film Authorship (1 Unit)**

Idea of authorship in the media and an examination of different uses of author theory related to the work of particular artists.

*Literature Fine Arts Distro Area*

**RTVF 322-0 Radio/Television/Film Genre (1 Unit)**

Concept of genre in the media, with reference to popular American forms.

*Literature Fine Arts Distro Area*

**RTVF 325-0 Film, Media & Gender (1 Unit)**

Explores issues of gender in film and media. Introduces students to major debates and theories regarding gender and sexuality in the media.

**RTVF 326-0 Film & TV Criticism (1 Unit)**

Contemporary critical methods applied to film and/or television. Students read literature on critical methods and analysis and write critical analyses of films and television programs.

*Literature Fine Arts Distro Area*

**RTVF 330-0 Culture Industries (1 Unit)**

Overview of business and social organization of film and television industry. Introduction to how media industries produce cultural products for local, national, and transnational audiences.

#### **RTVF 341-0 Technological Innovations (1 Unit)**

How technology develops and is assimilated into mass media.

#### **RTVF 345-0 History of Hollywood Cinema (1 Unit)**

Overview of the development of the classical Hollywood cinema, with particular emphasis on the 1920s through the early 1960s. Explores the relationship between industry practices and aesthetic features of classical narrative film genres.

#### **RTVF 351-0 National Cinema (1 Unit)**

Historical aspects of cinema in a culture outside the United States or a social/cultural/intellectual movement within cinema's general evolution.

#### **RTVF 353-0 Film, Media, and Globalization (1 Unit)**

Explores theories of media's role in the globalization of cultures. Examines transnational production, marketing, and reception of film, television, and/or digital media.

#### **RTVF 358-0 Topics in Improv (1 Unit)**

In-depth study and practice of improv techniques and aesthetics. Sample topics include Intro to Improv, Improvising Characters, Writing and Performing Stand-up, Writing with Improv, Improvising the Text-based Collaborative Show, Improvised Comedy Web Series.

#### **RTVF 360-0 Topics in Media Writing (1 Unit)**

Various approaches to screenwriting, emphasizing different modes and genres, such as the short film, the feature film, screenplays based on preexisting material, the teen film, interactive computer scenarios. May be repeated for credit, depending on the change in topic.

Prerequisite: RTVF 260-0.

#### **RTVF 363-0 Writing the TV Pilot (1 Unit)**

Students will learn the craft of writing a television pilot in this small, workshop-based course.

Prerequisite: RTVF 260-0.

#### **RTVF 364-0 Writing the Feature (1 Unit)**

Students will learn the craft of writing a feature film in this small, workshop-based course.

Prerequisite: RTVF 260-0.

#### **RTVF 365-0 Writing the Adaptation (1 Unit)**

Students will learn the craft of writing an adaptation in this small, workshop-based course.

Prerequisite: RTVF 260-0.

**RTVF 368-1 Introduction to Acting for the Screen (1 Unit)** Foundational concerns and practices for screen acting. Scene analysis, rehearsal, staging and camera space, casting, editing for performance. Creating and portraying characters for most effective capture by the camera. Film directing techniques as related to the actor. Required introductory course for the Acting for Screen module sequence. Prerequisites : RTVF 190-0 and either THEATRE 171-0 or THEATRE 273-1.

**RTVF 368-2 Advanced Acting for Screen (1 Unit)** A retrospective critique of curricular and extracurricular performance work in the Acting for Screen module intended for seniors and other students about to graduate. Course will involve continued advanced scene work, as well as an evaluation of performer's range and capabilities as they apply to film and television industries, and the student's professional self-presentation through a self-edited actor reel and resume. Prerequisites: RTVF 368-1/THEATRE 376 and at least one approved Acting for Screen module elective.

**RTVF 369-0 Topics in Acting for the Screen (1 Unit)** Production-based courses on a range of practices and methods in acting for screen. May be repeated as topic varies. Counts as elective for the Acting for Screen module. Prerequisite: RTVF 190-0.

#### **RTVF 370-0 Topics in Pre-Production (1 Unit)**

In-depth study of preproduction film, video, and media techniques and aesthetics. Sample topics include storyboarding, producing, and motion graphics.

Prerequisite: RTVF 190-0.

#### **RTVF 372-0 Editing (1 Unit)**

The technique and art of editing for film. Topics include editing for continuity, controlling pace and rhythm, and editing nonlinear narratives. Prerequisite: RTVF 190-0.

#### **RTVF 373-0 Topics in Sound (1 Unit)**

In-depth study of sound techniques and aesthetics.

Prerequisite: RTVF 190-0.

#### **RTVF 374-0 Topics in Cinematography (1 Unit)**

In-depth study of cinematography techniques and aesthetics.

Prerequisite: RTVF 190-0.

#### **RTVF 376-0 Topics in Interactive Media (1 Unit)**

Exploration of the techniques and aesthetics of interactivity using various media.

Prerequisite: RTVF 190-0.

#### **RTVF 377-0 Topics in Non-fiction Media (1 Unit)**

In-depth study of nonfiction media techniques and aesthetics.

Prerequisite: RTVF 190-0.

#### **RTVF 378-0 Topics in Post-Production (1 Unit)**

In-depth study of postproduction film, video, and media techniques and aesthetics. Sample topics include color correction, special-effects cinematography, and finishing.

Prerequisite: RTVF 190-0.

#### **RTVF 379-0 Topics in Film/Video/Audio Production (1 Unit)**

In-depth study and practice of one area of film, video, or television. May be taken more than once for credit, depending on changes in topic.

Prerequisite: RTVF 190-0.

#### **RTVF 380-0 Cinematography - Film (1 Unit)**

Techniques, aesthetics, and technologies of lighting for cinema using film and film cameras.

Prerequisite: RTVF 190-0.

#### **RTVF 381-0 Cinematography - Digital (1 Unit)**

Techniques, aesthetics, and technologies of lighting and digital camera skills.

Prerequisite: RTVF 190-0.

#### **RTVF 383-0 Introduction to Sound Production (1 Unit)**

Introduction to the theories and principles of basic sound production. Demos, lectures, readings, screenings, and exercises cover all basics of sound recording technology.

Prerequisite: RTVF 190-0.

#### **RTVF 384-0 Introduction to Sound Postproduction (1 Unit)**

Introduction to the theories and principles of basic sound production. Demos, lectures, readings, screenings, and exercises cover all basics of sound recording technology.

Prerequisite: RTVF 383-0.

**RTVF 389-0 Practicum in RTVF Research (1 Unit)** Collaboration with a faculty member on design and execution of a media research project. Students learn how to construct and complete a research project and

document results. Requires a paper or other form of work product as determined by the faculty member.

#### **RTVF 390-0 Topics in Directing (1 Unit)**

Single-camera dramatic directing, including visualization and breakdown of scripts, camera blocking, and working with actors.

Prerequisite: RTVF 190-0.

#### **RTVF 392-0 Documentary Production (1 Unit)**

Students examine documentary practices and produce their own shorts.

Prerequisite: RTVF 190-0.

#### **RTVF 393-0 2D Computer Animation (1 Unit)**

Animation techniques in the 2-D sphere and incorporation of visual design principles.

Prerequisite: RTVF 190-0.

#### **RTVF 394-0 Experimental Media Production (1 Unit)**

Creation of an experimental work as a linear film or video, an interactive website, an installation, a game, or a multidisciplinary performance.

Prerequisite: RTVF 190-0.

#### **RTVF 395-0 Computer Animation: 3D (1 Unit)**

The fundamental concepts and techniques of 3-D computer modeling and animation. Use of concepts acquired in camera-based production techniques to create a rendered animation.

Prerequisite: RTVF 190-0.

**RTVF 397-1 Advanced Directing I (1 Unit)** Two-quarter sequence for students creating advanced artistic production, with critique of work throughout the production and postproduction process; conceptual resources offered as needed. Students may work in any genre (documentary, narrative, experimental) and any medium. Admission based on portfolio of previous media work and proposal for project, including script and budget.

**RTVF 397-2 Advanced Directing II (1 Unit)** Two-quarter sequence for students creating advanced artistic production, with critique of work throughout the production and postproduction process; conceptual resources offered as needed. Students may work in any genre (documentary, narrative, experimental) and any medium. Admission based on portfolio of previous media work and proposal for project, including script and budget.

#### **RTVF 398-0 Symposium: Issues in RTVF (1 Unit)**

Special issues and topics in the analysis of radio, television, film, and popular culture.

**RTVF 399-0 Independent Study (1 Unit)** Prerequisite: consent of undergraduate dean after submission of petition.

## Film and Media Studies Minor

<https://communication.northwestern.edu/academics/radio-television-film/undergraduate-programs/minor-film-media-studies.html>

The Film and Media Studies Program brings together faculty and students from across the University who are interested in thinking about film and media within a broad intellectual framework. Students in this interdisciplinary program acquire critical tools for analyzing traditional and new media, as well as knowledge of some crucial historical and interpretive problems raised by the study of media within the context of the humanities and social sciences. Students who minor in film and media studies are encouraged to participate in the rich and varied media offerings of the University, including film series and individual film screenings, workshops, performances, exhibitions, and presentations by invited speakers. Students must formally apply to minor in film and

media studies in the School of Communication's Department of Radio/Television/Film.

The minor is open to all Northwestern undergraduates except Radio/Television/Film majors.

## Minor Requirements (6 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor.

- RTVF 220-0 Analyzing Media Texts
- 5 additional units of credit with a primary emphasis on film and/or media studies, chosen from the following and including at least 3 at the 300 level.

Course	Title
RTVF 298-0	Studies in Media Topics
RTVF 310-0	Television History
RTVF 312-1	History of Film I
RTVF 312-2	History of Film II
RTVF 313-1	Doc Film History & Criticism
RTVF 313-2	Documentary Film & Video
RTVF 314-0	History of the Recording Industry
RTVF 315-0	Audio Drama
RTVF 316-0	Media and Cultural Theory
RTVF 321-0	Radio/Tv/Film Authorship
RTVF 322-0	Radio/Television/Film Genre
RTVF 325-0	Film, Media & Gender
RTVF 326-0	Film & TV Criticism
RTVF 330-0	Culture Industries
RTVF 341-0	Technological Innovations
RTVF 345-0	History of Hollywood Cinema
RTVF 351-0	National Cinema
RTVF 353-0	Film, Media, and Globalization
RTVF 398-0	Symposium: Issues in RTVF
COMM_ST 270-0	Media Effects
COMM_ST 274-0	Power in Entertainment
COMM_ST 275-0	Persuasive Images: Rhetoric of Popular Culture
ASIAN_LC 224-0	Introduction to Japanese Film, Media, and Visual Culture
CLASSICS 245-0	Classics and the Cinema
COMP_LIT 305-0	Studies in Film, Media, and Visual Culture
ENGLISH 214-0	Introduction to Film and Its Literatures
ENGLISH 386-0	Studies in Literature and Film
FRENCH 375-0	French Film
GERMAN 228-0	History of German Film
ITALIAN 251-0	Introduction to Italian Cinema
ITALIAN 351-0	Italian Film and Transnational Cinema
RELIGION 371-0	Religion, TV, and Film
SLAVIC 267-0	Czech Culture: Film, Visual Arts & Music
SLAVIC 367-1	Russian Film

The following are topics courses and may only count with advisor approval when the primary emphasis of the course is film or media studies.

Course	Title
ART_HIST 390-0	Undergraduate Seminar
COMP_LIT 383-0	Special Topics in Theory: Critical Theory
FRENCH 390-0	Topics in Literature and Culture
SPANISH 397-0	Topics in Latin American, Latina & Latino, and Iberian Literatures and Cultures (Taught in English)

Other courses also may be counted toward the minor with the approval of a film and media studies advisor.

## Game Design + Media Arts + Animation Minor

<https://communication.northwestern.edu/academics/radio-television-film/undergraduate-programs/minor-game-media-animation.html>

The minor in Game Design + Media Arts + Animation enables students to take the initial step toward a career in game design, digital interactive media arts, and animation (both 2D and 3D). This minor helps students hone their voice in the spectrum of the expressive possibilities of interactive, computational, and digital media. The sequence of courses will guide students to create a portfolio that may lead to an industry job or a graduate program. Students will develop skills for collaboration with computer programmers, installation artists, visual designers, sound designers and animators. This minor introduces students to seminal and emerging trends in game design, media arts, and animation. It will give students opportunities to create cutting-edge games and interactive art installations, understand the dynamics of game design companies and media arts studios, develop animation for games and cinematic arts, use emerging and immersive technologies to make films, design interactive objects, learn coding, and develop digital platforms for a variety of uses. The minor draws on courses offered both inside and outside of the School of Communication and is open to all Northwestern undergraduate students.

## Minor Requirements (6 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor. RTVF majors may count a maximum of 2 courses toward both the RTVF major and the Game Design + Media Arts + Animation minor.

Selected, in any combination, from:

Course	Title
RTVF 376-0	Topics in Interactive Media (all classes; recent offerings include Introductory Game Studio, Introductory 3D Modelling, Video Game Character Design, Video Game Entrepreneurship)
RTVF 360-0	Topics in Media Writing (only Writing for Video Games)
RTVF 370-0	Topics in Pre-Production (only Storyboarding & Layout and Conceptual Design)
RTVF 379-0	Topics in Film/Video/Audio Production (Video Performance & Projection Mapping, Analogue Animation)
RTVF 393-0	2D Computer Animation
RTVF 395-0	Computer Animation: 3D

RTVF 398-0	Symposium: Issues in RTVF (Video Game Theory & Criticism, Graphic Novels, Avatars and Player Characters)
COMP_SCI 376-0	Computer Game Design and Development
COMP_SCI 377-0	Game Design Studio
COMP_SCI 396-0	Special Topics in Computer Science (AI and Experimental Narrative)
COMP_SCI 397-0	Special Projects in Computer Science (Knight Lab: Studio)
JOUR 342-1	Knight Lab: Studio
ART 390-0	Studio (Drawing Humor)

Other courses also may be counted toward the minor with the approval of a Game Design + Media Arts + Animation adviser.

## Radio/Television/Film Major

### Major Requirements (12 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

#### Introductory Courses (3 units)

- 3 lower-level courses:

Course	Title
RTVF 190-0	Media Construction
RTVF 220-0	Analyzing Media Texts
1 additional 200-level course from the following list:	
RTVF 202-0	First-Year Topics Seminar
RTVF 260-0	Foundations of Screenwriting
RTVF 298-0	Studies in Media Topics
COMM_ST 275-0	Persuasive Images: Rhetoric of Popular Culture

#### Advanced Courses (9 units)

- 1 300-level course in media history or theory from the following list:

Course	Title
RTVF 310-0	Television History
RTVF 312-1	History of Film I
RTVF 312-2	History of Film II
RTVF 313-1	Doc Film History & Criticism
RTVF 314-0	History of the Recording Industry
RTVF 315-0	Audio Drama
RTVF 316-0	Media and Cultural Theory
RTVF 345-0	History of Hollywood Cinema

- 8 additional units of credit in communication at the 300 and 400 levels, including at least 6 courses in the department at the 300 and 400 levels, and including no more than a total of 2 units of independent study, practicums, or internships

## SoC Requirements (1 unit)

### First Year Seminar (1 unit)

Course	Title
CMN 101-0	SoC First Year Seminar: Interdisciplinary Topics in Communication Arts & Sciences

### **SoC Capstone**

This requirement can be fulfilled by a combination of CMN 398-1 and CMN 398-2. Other courses may be appropriate as substitutions for CMN 398-1 and/or CMN 398-2. Students may also consult with their academic advisor if they have questions about appropriate substitutions.

Course	Title
CMN 398-1	SoC Capstone: Lecture
CMN 398-2	SoC Capstone: Lab

## **Additional Requirements (29 units)**

### **Distribution Requirements (18 units)**

18 units of credit outside the school, including 8 units of credit from the School of Communication distribution areas: 2 from science, mathematics, and technology; 3 from individual and social behavior; and 3 from humanities and fine arts.

### **Electives (11 units)**

Electives in communication and other areas to complete a minimum of 42 units.

### **Courses Outside Communication**

6 courses at the 200 level or above outside communication, including at least 3 courses at the 300 level or above; courses taken to satisfy this requirement may fulfill distribution or elective course requirements.

### **Language Requirement**

Two-year proficiency in a classical or modern foreign language as defined by the Weinberg College foreign language proficiency requirement.

## **Sound Design Minor**

<https://communication.northwestern.edu/academics/radio-television-film/undergraduate-programs/minor-sound-design.html>

The minor in sound design allows students to study and create work in sound as it relates to film/video, new media, theatre, radio, and installation/exhibition projects. The minor draws on courses offered through the School of Communication, Bienen School of Music, and Weinberg College of Arts and Sciences. The minor is open to all Northwestern undergraduate students.

## **Minor Requirements (6 units)**

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor. RTVF majors may count a maximum of 2 courses toward both the RTVF major and the Sound Design minor.

Selected, in any combination, from:

### **Radio/Television/Film**

Course	Title
RTVF 314-0	History of the Recording Industry
RTVF 315-0	Audio Drama
RTVF 373-0	Topics in Sound (topics may include advanced audio postproduction; sound design for horror, comedy, or the web; advanced Foley)

RTVF 376-0	Topics in Interactive Media (only Digital Musical Instrument Design, Interactive Sound Design, and Interactive Sound for Live Events)
RTVF 383-0	Introduction to Sound Production
RTVF 384-0	Introduction to Sound Postproduction
RTVF 398-0	Symposium: Issues in RTVF (only The Art of the Soundtrack)
RTVF 399-0	Independent Study

### **Theatre**

Course	Title
THEATRE 223-0	Theatre Sound
THEATRE 323-0	Advanced Theatre Sound

### **Music Technology**

Course	Title
MUS_TECH 300-0	Introduction to Music Technology
MUS_TECH 321-0	Producing in the Virtual Studio
MUS_TECH 335-0	Selected Topics (topics may include recording and basic audio; studio techniques for electroacoustic music)
MUS_TECH 340-0	Composing With Computers
MUS_TECH 342-1	
MUS_TECH 342-2	

Other courses also may be counted toward the minor with the approval of a sound design adviser.

### **Theatre**

<https://communication.northwestern.edu/academics/theatre/index.html>  
[\(https://communication.northwestern.edu/academics/theatre/\)](https://communication.northwestern.edu/academics/theatre/)

Of all the performing arts, none draws on the rich variety of human experience more fully than theatre. Theatre communicates the drama of life—whether the past, present, or future, and whether real or imagined—with immediacy, excitement, and eloquence. The student of theatre, therefore, must be a student of human society and must understand how social forces impinge on human behavior. To paraphrase Boswell, students of the theatre take as their subject the entire system of human life.

For this reason students who major in theatre at Northwestern combine a liberal arts education with intensive training in the theories and arts of the theatre. At the heart of the theatre program lies the idea that the best theatre artist is the one who combines a broad knowledge of the literature and theory of the field with highly developed skills in its practice.

Students spend approximately one-third of their program studying in the Department of Theatre, including courses in history, literature, and criticism; acting, voice, and movement; directing; devising theatre; stage production; design; playwriting; dramaturgy; creative drama and theatre for young audiences; and dance. Students develop the ability to approach problems and issues from a variety of perspectives while developing skills in research and writing, laboratory work, group discussion, oral presentation, performance, and production. Another third of the program comprises distribution requirements outside the department, and a final third is devoted to elective courses selected from a wide spectrum of University offerings.

A major in dance (p. 102) is also available within the Department of Theatre. The dance major prepares students for further advanced academic work or a wide range of positions in professional dance. The major's comprehensive curriculum emphasizes the study of dance as well as the act of dancing. Students are prepared for lifetime involvement in the field and for continued development intellectually, artistically, and professionally within the dance world. In addition to dance technique and choreography, the program provides students with opportunities for writing, research, and analysis in the field. The major presents a well-integrated view of dance while also providing sound technical training in a variety of forms, with modern dance and jazz as the foundation techniques. The department offers a number of dance organizations and performing opportunities.

## **Programs of Study**

- Dance Major (p. 102)
- Dance Minor (p. 103)
- Music Theatre Certificate (p. 104)
- Theatre Major (p. 105)
- Theatre Minor (p. 107)

**THEATRE 151-0 Class Voice for Music Theatre (0.5 Unit)** This group voice class is designed to improve each individual student's vocal instrument and their unique approach to singing. The class will study vocal technique and performance of musical theatre, focusing on healthy vocal production including sustainable respiration, phonation, and resonance. Using a diverse range of teaching methods and performance literature, students will be guided to moments of self-discovery with emphasis given to strengthening technique, applying technique to musical theatre repertoire, and improving confidence in performance.

**THEATRE 160-1 Introduction to Theatrical Performance (1 Unit)** In this course, students contextualize, interpret, perform, and critique theatrical texts to develop artistic points of view on the practice of theatre.

**THEATRE 160-2 Introduction to Theatrical Contexts and Research (1 Unit)** This class equips students with critical modes of thinking about theatre as both a practice and a discipline. It will feature a range of analytical and practical methodologies and develop students' ability to craft independent research papers.

**THEATRE 160-3 Introduction to Theatrical Design and Management (1 Unit)** This course immerses theatre majors in an in-depth study of professional production and design processes. It includes a production lab to implement the directing and design process.

**THEATRE 170-0 Voice for Performance (1 Unit)** The focus is on the development of vocal technique for the performer through work on body alignment, breathing, vocal placement, resonance and exploration of the sounds of English using the IPA (International Phonetic Alphabet). Individual vocal problems are analyzed and remedial work prescribed. Concentrates on developing the speaking voice using the sounds of English and their relationship to meaning through the use of poetry and selected text. Open to theatre majors only.

**THEATRE 171-0 Basic Acting (1 Unit)** For non-majors. Introduction to the study of acting: sensory response, imagination, and characterization work leading to prepared scenes from selected plays.

**THEATRE 172-0 Movement for Performance (1 Unit)** This course introduces fundamental tools for embodied performance. Students will gain an introductory knowledge of how their body functions, and how to use sensory perception and proprioception to enliven their skills as performers.

**THEATRE 211-0 Fundamentals of Stage Directing (1 Unit)** An introductory course focusing on defining the role of the director, as well as practical strategies for work with text and actors.

**THEATRE 220-0 Introduction to Theatre Design (1 Unit)** Introduces the principles and elements of visual design as they relate to the theatre design areas of scenery, costume, and lighting. Applies these principles and elements to a play by creating scenery, costume, and lighting design ideas based on text analysis, point of view, and research in a production notebook format. Does not count toward the requirements for the theatre major. Course is a requirement and prerequisite for all 200-level design courses for the theatre minor.

**THEATRE 221-1 Design Process: Scene (1 Unit)** Development of stage design for the theatrical designer, from initial reading of the script to final design. Crew participation in department productions. 1. Scene design. Prerequisite: sophomore standing and consent of instructor.

**THEATRE 221-2 Design Process: Costume (1 Unit)** Development of stage design for the theatrical designer, from initial reading of the script to final design. Crew participation in department productions. 2. Costume design. Prerequisite: sophomore standing and consent of instructor.

**THEATRE 221-3 Design Process: Lighting (1 Unit)** Development of stage design for the theatrical designer, from initial reading of the script to final design. Crew participation in department productions. 3. Lighting design. Prerequisite: sophomore standing and consent of instructor.

**THEATRE 222-0 Stage Makeup (1 Unit)** Theory and practice of stage makeup. Crew participation in department productions. Prerequisite: consent of instructor.

**THEATRE 223-0 Theatre Sound (1 Unit)** An introductory class in sound design for the theatre. Crew participation in department productions. Prerequisite: consent of instructor.

**THEATRE 231-0 Theatre for Young Audiences (1 Unit)** Selection, evaluation, direction, and production of plays for children. Prerequisite: consent of instructor.

**THEATRE 240-0 Special Topics in Theatre Studies (1 Unit)** Content varies. Studies of individual playwrights, national or regional theatres, historical periods, performance practices, or theoretical inquiries. Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 241-1 Theatre History I: Pre-1650 (1 Unit)** Survey of the theory and history of world theatre and drama before 1650. Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 241-2 Theatre History II: Post 1650 (1 Unit)** Survey of the theory and history of world theatre and drama after 1650. Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 242-0 Topics in Shakespeare (1 Unit)** Critical study of Shakespeare's plays, theatrical culture, and theories and adaptations based on his work. Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 244-1 Modern & Contemp Theatre: Modern (1 Unit)** Critical study of major dramatists, theories, and production styles. 1870-1920.

**THEATRE 244-2 Modern & Contemp Theatre: Contemporary (1 Unit)** Critical study of major dramatists, theories, and production styles. 1920-present.

**THEATRE 245-0 Theatre of the Americas (1 Unit)** Survey of theatre and drama of the Americas; examines relevance of plays, performances such as pageants and blackface minstrelsy, theatre companies, and their original contexts to their national identity. Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 250-0 Special Studio Topics in Music Theatre (0.5 Unit)**

This special topics course explores interdisciplinary modes of Music Theatre rooted in group practice. Topics may include Solo and Ensemble Voice Performance, Incorporation of Song and Dance, Actor-Musician Performance Techniques, Cabaret Performance and others as designed by the music theatre faculty.

**THEATRE 251-1 Intermediate Voice I (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. Performances at studio class, juries and special topics classes required. The primary course objective is to improve your individual instrument and approach to singing. Emphasis in lessons will be placed upon strengthening technique, improve confidence for performance and application of technique to repertoire. Students continue to build musicianship skills and their understanding and assimilation of vocal technique.

**THEATRE 251-2 Intermediate Voice II (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. Performances at studio class, juries and special topics classes required. The primary course objective is to improve your individual instrument and approach to singing. Emphasis in lessons will be placed upon strengthening technique, improve confidence for performance and application of technique to repertoire. Students continue to build musicianship skills and their understanding and assimilation of vocal technique.

**THEATRE 251-3 Intermediate Voice III (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. Performances at studio class, juries and special topics classes required. The primary course objective is to improve your individual instrument and approach to singing. Emphasis in lessons will be placed upon strengthening technique, improve confidence for performance and application of technique to repertoire. Students continue to build musicianship skills and their understanding and assimilation of vocal technique.

**THEATRE 252-0 Intermediate MT Techniques (1 Unit)**

**THEATRE 253-0 Music Theatre History (1 Unit)** Three-part course, covering the major movements in the histories of dance, opera, and musical comedy. Examination of artists and their works.

**THEATRE 255-0 Creating the Musical (1 Unit)** A large variety of topics courses designed to educate students on the various areas of musical creation. Topics will cover: lyric writing, song writing, book creation, score/scene creation, among others.

**THEATRE 256-0 Musicianship for Actors (1 Unit)****THEATRE 271-0 Intermediate Acting (1 Unit)**

**THEATRE 272-0 Voice for Shakespeare (1 Unit)** The focus of the class is on the training and development of the actor's voice integrating the work in THEATRE 170-0 Voice for Performance with the focus on Shakespeare's heightened text. Students work to develop optimal pitch, vocal range, improve articulation, intonation and stress through the performance of Shakespeare's Sonnets, scenes, monologues and group work. Prerequisites: THEATRE 170-0 and permission of instructor.

**THEATRE 273-1 Acting I (1 Unit)** 1. Basic concepts. Prerequisites: THEATRE 140-1, THEATRE 140-2 (or equivalent) and consent of instructor.

**THEATRE 273-2 Acting I (1 Unit)** 2. Dramatic imagination. Prerequisites: THEATRE 140-1, THEATRE 140-2 (or equivalent) and consent of instructor.

**THEATRE 273-3 Acting I (1 Unit)** 3. Dramatic characterization. Prerequisites: THEATRE 140-1, THEATRE 140-2 (or equivalent) and consent of instructor.

**THEATRE 281-0 Intro to Playwriting (1 Unit)** A course in which students read plays, complete writing exercises based on the reading, see plays off

campus, and ultimately research and write the beginning of a full-length play of their own. The course is open to students in any major and writers of all levels.

**THEATRE 292-0 Introduction to Stage Management (1 Unit)**

Preproduction, rehearsal, and technical rehearsal process of theatrical productions. Basic stage management tools taught in theory: assembling a production book, blocking, scheduling, communication, and cueing. Prerequisite: consent of instructor.

**THEATRE 310-0 Special Topics in Directing (1 Unit)**

Studies with Directing Faculty on special topics related to directing and theatrical forms.

Prerequisite: consent of instructor.

**THEATRE 311-0 Advanced Stage Directing 04A45 (1 Unit)** Studies in particular aspects of directing or in forms of theatre. Students will further develop practical and theoretical skills as directors. Prerequisites: THEATRE 211-0 Fundamentals of Directing, permission of instructor.

**THEATRE 312-0 Text Analysis (1 Unit)**

Seminar in analysis of dramatic texts as related to the problems of realized theatrical production.

Prerequisite: consent of instructor.

**THEATRE 313-0 History of Directing (1 Unit)**

**THEATRE 319-0 Creative Process: Envisioning the Theatrical Figure (1 Unit)** Techniques and materials of graphic communication for the stage designer. May be repeated for credit with change of topic. Prerequisite: consent of instructor.

**THEATRE 320-0 Special Topics in Theatre Design (1 Unit)**

**THEATRE 321-1 Advanced Design Process: Scene (1 Unit)** For advanced undergraduate set design students and graduate students studying scene design as a secondary area. Lectures and design projects. Prerequisites: THEATRE 221-1 and consent of instructor.

**THEATRE 321-2 Advanced Design Process: Costume (1 Unit)** For advanced undergraduates studying costume design and graduate students studying costume design as a secondary area. Lectures and design projects. Prerequisites: THEATRE 221-2 and consent of instructor.

**THEATRE 321-3 Advanced Design Process: Lighting (1 Unit)** For advanced undergraduate lighting design students and graduate students studying lighting design as a secondary area. Lectures and design projects. Prerequisites: THEATRE 221-3 and consent of instructor.

**THEATRE 322-0 History of Costume and Decor (1 Unit)** Style and aesthetics of art, architecture, fashion, and decorative arts. Special emphasis on periods of theatrical production. Current topic will be listed in the quarterly class schedule. May be repeated for credit with change of topic. Prerequisite: consent of instructor.

**THEATRE 323-0 Advanced Theatre Sound (1 Unit)** Planning and execution of sound for theatrical production; design of the actor's acoustical environment. Crew participation in department productions. Prerequisites: junior standing and consent of instructor.

**THEATRE 324-0 Scene Painting (1 Unit)** Traditional and contemporary theory and practice of scene painting. Lecture and studio. Lab fee required. Prerequisite: consent of instructor.

**THEATRE 325-1 Drawing and Painting for the Theatre: Graphic Arts for the Stage Designer (1 Unit)** Techniques and materials of graphic communication for the stage designer. May be repeated for credit with change of topic. Prerequisite: consent of instructor.

**THEATRE 325-2 Drawing and Painting for the Theatre: Rendering the Theatrical Space (1 Unit)** Techniques and materials of graphic

communication for the stage designer. May be repeated for credit with change of topic. Prerequisite: consent of instructor.

**THEATRE 325-4 Drawing & Painting for the Theatre: Drafting (1 Unit)**

Techniques and materials of graphic communication for the stage designer. May be repeated for credit with change of topic. Prerequisite: consent of instructor.

**THEATRE 326-1 Drawing and Painting for the Theatre: Freehand Drawing (1 Unit)**

Drawing and composition using a variety of drawing materials and media for scenery, costume, and lighting designers. Lecture and studio. Prerequisite: consent of instructor.

**THEATRE 326-2 Drawing and Painting for the Theatre: The Figure in Space (1 Unit)**

Drawing and composition using a variety of drawing materials and media for scenery, costume, and lighting designers. Lecture and studio. Prerequisite: consent of instructor.

**THEATRE 327-0 Textile Arts and Crafts (1 Unit)**

For advanced undergraduate and graduate students studying costume design. Topics may include fabric dying, fabric modification, wig ventilation, millinery construction, and yarn arts. May be repeated for credit with change of topic. Prerequisites: THEATRE 344-0 and consent of instructor.

**THEATRE 328-1 Period Pattern Drafting and Draping (1 Unit)**

Techniques of flat pattern drafting and advanced construction used to create historical garment patterns for the stage. 1. Flat patterns. Prerequisites: junior standing and consent of instructor.

**THEATRE 328-2 Period Pattern Drafting and Draping (1 Unit)**

Techniques of flat pattern drafting and advanced construction used to create historical garment patterns for the stage. 2. Draping. Prerequisites: junior standing and consent of instructor.

**THEATRE 328-3 Period Pattern Drafting and Draping (1 Unit)**

Techniques of flat pattern drafting and advanced construction used to create historical garment patterns for the stage. 3. Period patterns. Prerequisites: junior standing and consent of instructor.

**THEATRE 329-0 Computer Graphics for the Theatre Artist (1 Unit)**

Computer graphics for the stage designer. Investigation of available software programs and strategies for use in theatre. Current topic will be listed in the quarterly class schedule. May be repeated for credit with change of topic. Lecture/laboratory. Crew participation in department productions may be required. Prerequisite: consent of instructor.

**THEATRE 330-0 Special Topics in TYA (1 Unit)**

**THEATRE 332-1 The Art of Storytelling (1 Unit)**

Ancient traditions and current renaissance of storytelling. Strategies for selecting, preparing, and sharing stories in performance. Applications in theatre, communication, education, religion, law, healing professions, leadership, and business. 1. Basic techniques. Students use storytelling in presentations and performance.

**THEATRE 332-2 Advanced Storytelling (1 Unit)**

Ancient traditions and current renaissance of storytelling. Strategies for selecting, preparing, and sharing stories in performance. Applications in theatre, communication, education, religion, law, healing professions, leadership, and business. 2. Advanced techniques of research, preparation, and performance, culminating in a public event. Students use storytelling in presentations and performance. Prerequisites: THEATRE 332-1 and consent of instructor.

**THEATRE 333-1 Creative Drama (1 Unit)**

Applications of creative drama in many areas (e.g., teaching, performance, therapy, writing, recreation). Students explore the use of process-centered improvisations in their lives and work. Prerequisite: consent of instructor.

**THEATRE 333-2 Advanced Creative Drama (1 Unit)**

Explores improvised drama as a teaching method and a means of learning for the elementary school child. Theory and practice through reading, discussion, films, and observation. Course culminates in extended teaching projects with children from local schools.

Prerequisites: THEATRE 333-1 (or equivalent) and consent of instructor.

**THEATRE 340-0 Special Topics in Advanced Theatre Studies (1 Unit)**

Content varies. Advanced study of individual playwrights, practitioners, regional theatres, historical periods, performance practices, or theoretical inquiries.

Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 341-0 Theatre and Social Change (1 Unit)**

Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 342-0 Dramaturgy (1 Unit)**

Seminar in creative dramaturgical research as it relates to the problems of realized theatrical production.

Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 343-0 Puppetry History & Performance (1 Unit)**

Seminar in the history and theory of puppetry with an emphasis on embodied experimentation.

Prerequisite: THEATRE 140-1, THEATRE 140-2 or consent of instructor.

**THEATRE 344-0 Gender & Performance (1 Unit)**

Exploration of recent research on the social and political background of gender, particularly women's access to performative expressions. Historical aesthetics: changing debates on women's participation in the public theatre and the significance of the body in performance.

**THEATRE 345-0 African American Theatre (1 Unit)**

Study of African American playwrights, practitioners, theatre companies, historical performance practices, theoretical inquiries, or transnational influences.

Prerequisite: THEATRE 140-1, THEATRE 140-2 or AF\_AM\_ST 259-0 or consent of instructor.

**THEATRE 346-0 Asian American Theatre (1 Unit)**

Study of Asian American playwrights, practitioners, theatre companies, historical performance practices, theoretical inquiries, or transnational influences.

**THEATRE 347-0 Latinx Theatre (1 Unit)**

Study of Latinx playwrights, practitioners, theatre companies, historical performance practices, theoretical inquiries, or transnational influences.

**THEATRE 348-0 Transnational Theatre (1 Unit)**

Study of the history, theory, or literature of transnational theatre and other performance forms.

**THEATRE 350-0 Special Topics in Musical Theatre (1 Unit)**

**THEATRE 351-1 Advanced Voice I (0.5 Unit)**

Private instruction in vocal musical theatre technique and repertoire. Performances at studio class, juries and special topics classes required. The primary course objective is to improve your individual instrument and approach to singing. Emphasis in lessons will be placed upon strengthening technique, improve confidence for performance and application of technique to repertoire. Students continue to build musicianship skills and their understanding and assimilation of vocal technique.

**THEATRE 351-2 Advanced Voice II (0.5 Unit)**

Private instruction in vocal musical theatre technique and repertoire. Performances at studio class, juries and special topics classes required. The primary course objective is to improve your individual instrument and approach to singing. Emphasis in lessons will be placed upon strengthening technique, improve confidence for performance and application of technique to repertoire.

Students continue to build musicianship skills and their understanding and assimilation of vocal technique.

**THEATRE 351-3 Advanced Voice III (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. Performances at studio class, juries and special topics classes required. The primary course objective is to improve your individual instrument and approach to singing. Emphasis in lessons will be placed upon strengthening technique, improve confidence for performance and application of technique to repertoire. Students continue to build musicianship skills and their understanding and assimilation of vocal technique.

**THEATRE 351-4 Advanced Voice IV (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. The primary course objective is to improve your individual instrument and approach to singing, to build endurance and stamina, and help you to transition into your professional singing career. Emphasis in lessons will be placed upon strengthening technique, perfecting cuts for optimum singing performance, vocal reliability, vocal health, and application of technique to repertoire. This year long curriculum will culminate in a capstone experience.

**THEATRE 351-5 Advanced Voice V (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. The primary course objective is to improve your individual instrument and approach to singing, to build endurance and stamina, and help you to transition into your professional singing career. Emphasis in lessons will be placed upon strengthening technique, perfecting cuts for optimum singing performance, vocal reliability, vocal health, and application of technique to repertoire. This year long curriculum will culminate in a capstone experience.

**THEATRE 351-6 Advanced Voice VI (0.5 Unit)** Private instruction in vocal musical theatre technique and repertoire. The primary course objective is to improve your individual instrument and approach to singing, to build endurance and stamina, and help you to transition into your professional singing career. Emphasis in lessons will be placed upon strengthening technique, perfecting cuts for optimum singing performance, vocal reliability, vocal health, and application of technique to repertoire. This year long curriculum will culminate in a capstone experience.

**THEATRE 352-1 Advanced Music Theatre Techniques I (1 Unit)** Various performance styles of musical theatre. Current topic will be listed in the quarterly class schedule. May be repeated for credit with change of topic. Instructor consent required.

**THEATRE 352-2 Advanced Music Theatre Techniques II (1 Unit)** Various performance styles of musical theatre. Current topic will be listed in the quarterly class schedule. May be repeated for credit with change of topic. Instructor consent required.

**THEATRE 353-0 Musical Theatre Techniques for Non-Music Theatre Cert (1 Unit)**

**THEATRE 354-0 Musical Theatre Repertoire (1 Unit)**

**THEATRE 355-0 Advanced Creating the Musical (1 Unit)** A large variety of advanced topics courses designed to educate students on the various areas of musical creation. Topics will cover: lyric writing, song writing, book creation, score/scene creation, among others.

**THEATRE 356-0 Advanced Musicianship for Actors: Theatre Styles and Genres (1 Unit)**

**THEATRE 357-0 Orchestration (1 Unit)**

**THEATRE 358-0 Showcase (1 Unit)**

**THEATRE 359-0 Senior Audition Techniques (1 Unit)**

**THEATRE 361-0 Partnered Swing Dancing (1 Unit)**

**THEATRE 362-0 Standing Down Straight for Actors (1 Unit)** Standing Down Straight® for Actors is a holistic, universally applicable voice-and-movement technique for theatre students. Students explore using natural speech patterns and natural movement patterns as the basis of all stage expression. Thus, in class exercises, monologues, and partnered scenes, they explore using gravity-directed relaxation as a way to calm body and mind - so that both body and mind can work with power, intensity, and without strain.

**THEATRE 370-0 Special Topics in Acting (1 Unit)**

**THEATRE 372-0 Advanced Voice Styles (1 Unit)** Advanced vocal techniques for the stage actor. Vocal styles including performing the plays of language and heightened text using texts of Molière, Oscar Wilde, Bernard Shaw, Noël Coward, Tom Stoppard. Prerequisites: THEATRE 170-0 Voice for Performance, THEATRE 272-0 Voice for Shakespeare and permission of instructor.

**THEATRE 373-1 Acting II: Analysis and Performance (1 Unit)** Theory, principles, and techniques of interpretation of drama from the actor's point of view. 1. tragedy. Prerequisite: consent of instructor.

**THEATRE 373-2 Acting II: Analysis and Performance (1 Unit)** Theory, principles, and techniques of interpretation of drama from the actor's point of view. 2. verse. Prerequisite: consent of instructor.

**THEATRE 373-3 Acting II: Analysis and Performance (1 Unit)** Theory, principles, and techniques of interpretation of drama from the actor's point of view. 3. realism. Prerequisite: consent of instructor.

**THEATRE 374-0 Dialects for the Stage (1 Unit)** Using the International Phonetic Alphabet, dialect recordings and selected text, students are given the tools to acquire a variety of dialects for performance in theatre and film. Principal dialects covered are standard British (Received Pronunciation), Cockney, Irish (North and South), French, Russian, German, American Southern and New York. Prerequisites: THEATRE 170-0 Voice for Performance, THEATRE 272-0 Voice for Shakespeare and permission of instructor.

**THEATRE 375-0 Advanced Acting Topics (1 Unit)** Special Topics for advanced senior actors explore complex forms of theatrical performance, technique, style, and cultural aspects an educated actor must consider and implement.

**THEATRE 376-0 Intro to Acting for the Screen (1 Unit)**

**THEATRE 377-0 Topics in Acting for the Screen (1 Unit)** Foundational concerns and practices for screen-specific acting. Scenic analysis, rehearsal, staging and camera space, casting, editing for performance. Creating and portraying characters for most effective capture by the camera. Film directing techniques as related to the actor. Required introductory course for the Acting for the Screen module sequence.

**THEATRE 378-0 Advanced Acting for Screen (1 Unit)** Retrospective critique of curricular and extracurricular performance work in the Acting for Screen module. Evaluation of performer's range and capabilities in terms of future projects and identity as an actor. Relationship between actor and director relative to the camera. Required course for the module. Prerequisites: THEATRE 376-0 and two approved module electives.

**THEATRE 380-0 Special Topics in Playwriting (1 Unit)**

**THEATRE 382-0 Playwriting Genres (1 Unit)**

**THEATRE 383-1 Advanced Playwriting Sequence (1 Unit)** Fundamental techniques of playwriting: a yearlong sequence aimed at developing original, full-length play. Prerequisite: consent of instructor.

**THEATRE 383-2 Advanced Playwriting Sequence (1 Unit)** Fundamental techniques of playwriting. A yearlong sequence aimed at developing

an original full-length play. Prerequisites: junior or senior standing and consent of instructor.

**THEATRE 383-3 Advanced Playwriting Sequence (1 Unit)** Fundamental techniques of playwriting. A yearlong sequence aimed at developing an original full-length play. Prerequisites: junior or senior standing and consent of instructor.

**THEATRE 390-0 Special Topics in Management (1 Unit)**

**THEATRE 392-0 Advanced Stage Management (1 Unit)** Problem solving in the stage manager's leadership role; advanced study in production realization and communication. Students will be required to stage manage or assistant stage manage a department production and will prepare a production book based on the production. Prerequisite: consent of instructor.

**THEATRE 393-0 Production Management (1 Unit)** Production Management roles and responsibilities, production budgets, timelines and building and leading production team. Prerequisites: Introduction to Stage Management and consent of instructor.

**THEATRE 394-0 Internship in Theatre Practice (1-4 Units)** Practice (3 units for undergraduates; 2 units for graduates) Production and/or management activities in a theatre company. Application required.

**THEATRE 395-0 Theatre Practicum (1 Unit)** Research, teaching, and/or production assistance in collaboration with departmental faculty. The aim of the practicum is for students to learn about theatrical education, research, or artistic process through applied practice rather than through traditional coursework (including independent study) or external professional opportunities (internships, apprenticeships, etc.). A student may take up to 4 credits of CMN 340-0 or THEATRE 395-0. One credit of CMN 340-0, THEATRE 395-0 may count towards the major requirements; the remaining three will be applied to Elective credit.

**THEATRE 396-0 Theatre Management and Arts Leadership (1 Unit)**

Exploring and understanding the Artistic and Business leadership and partnership in the Commercial and not for profit theatre communities. Prerequisites: Introduction to Stage Management and consent of instructor.

**THEATRE 397-0 Theatre Marketing (1 Unit)** Partnering with the Broadway in Chicago, students will interview and be placed into marketing teams to market a new musical. Prerequisites: consent of instructor and resume review.

**THEATRE 399-0 Independent Study (1 Unit)** Prerequisite: consent of undergraduate dean after submission of petition.

**DANCE 101-1 Introduction to Dance Studies (1 Unit)** A curricular foundation in critical dance studies: the significance of corporeality/embodiment, critical theories as applied to dance practices, cultural and historical contextual knowledges, movement description and dance analysis.

**DANCE 101-2 Dance as Creative Collaboration (1 Unit)** Students are introduced to the different ways dance performance materializes: choreography, improvisation, costume, lighting, production design, historical, political and artistic contexts. It will engage in creative and critical problem solving through choreographic thinking, improvisation, and collaborative embodied practice.

**DANCE 101-3 Introduction to the Dance Experience (1 Unit)** Foundation for further studies in dance technique, science, history, and analysis. Introduction to improvisation: dance and movement improvisation as a tool for developing a personal movement vocabulary.

**DANCE 110-0 Movement for the Stage (0.34 Unit)** Movement and body awareness. Improvisational techniques using time, space, weight, and effort as the instrument of expression.

**DANCE 120-0 Topics in Preparation for Performance (0.34 Unit)**

Different techniques each quarter to help prepare students for performance. Techniques include Pilates, yoga, Alexander technique, and the Feldenkrais method.

**DANCE 130-0 Music Theatre Dance I (0.34 Unit)** Music theatre styles, explored through the study of jazz, tap, and modern repertoire. Taken during junior year.

**DANCE 140-1 Basic Theatrical Dance I (0.34 Unit)** A foundation dance class for theatre, musical theatre and beginning movement students on theatrical dance: alignment, tempo, rhythm, spatial awareness. This course builds progressively with more complex movement phrases and technical specificity. Geared especially to MTCP and Theatre, Performance Studies and Music student who have 0-3 years' experience in dance.

**DANCE 140-2 Basic Theatrical Dance II (0.34 Unit)** A foundation dance class for theatre, musical theatre and beginning movement students on theatrical dance: alignment, tempo, rhythm, spatial awareness. This course builds progressively with more complex movement phrases and technical specificity. Geared especially to MTCP and Theatre, Performance Studies and Music student who have 0-3 years' experience in dance.

**DANCE 140-3 Basic Theatrical Dance III (0.34 Unit)** A foundation dance class for theatre, musical theatre and beginning movement students on theatrical dance: alignment, tempo, rhythm, spatial awareness. This course builds progressively with more complex movement phrases and technical specificity. Geared especially to MTCP and Theatre, Performance Studies and Music student who have 0-3 years' experience in dance.

**DANCE 150-0 Modern/Contemporary I (0.34 Unit)** Offered at levels I, II, and III each quarter to develop skills pertaining to modern/contemporary techniques. Higher levels progress more rapidly with a greater level of complexity, as class work focuses on a wider range of qualities and aesthetics. Style of modern technique varies with each instructor.

**DANCE 160-0 Dances of the African Diaspora I (0.34 Unit)** Offered at levels I, II, and III to expose students to a variety of techniques that come from Black diasporic practices which may include: jazz, tap, hip-hop, West African, Afro-contemporary. Style of technique varies with each instructor.

**DANCE 161-0 Jump Rhythm Technique 1 (0.34 Unit)** Offered at levels I and II. Dancing rhythmically-using jazz rhythms and the syncopated rhythms of funk, hip-hop, and other rock-based music to generate all dance movement.

**DANCE 170-0 Classical Dance I (0.34 Unit)** Offered at levels I, II, and III to cover classical dances from basic principles through advanced skills. Terminology and movements are based on class level. Classical dance can encompass ballet but also dance forms from across the globe (e.g., India, Cambodia, China, Korea, West Africa). Classical dance style varies with instructor.

**DANCE 180-1 Funk Jazz (0.34 Unit)** Foundations in multiple stage jazz dance techniques for MTCP or Dance Majors/Minors who are looking to expand their physical repertoire.

**DANCE 180-2 Theatre Jazz (0.34 Unit)** Foundations in multiple stage jazz dance techniques for MTCP or Dance Majors/Minors who are looking to expand their physical repertoire. Theatre jazz would encompass Fosse technique.

**DANCE 180-3 Street Jazz (0.34 Unit)** This class provides foundations in multiple stage jazz dance techniques for MTCP or Dance Majors/Minors who are looking to expand their physical repertoire. Street jazz could encompass current trends such as femme vogue or heels.

**DANCE 181-0 Jump Rhythm Tap 1 (0.34 Unit)** Offered at levels I and II. Using not only the feet but other parts of the body as well to "play" the syncopated rhythms of swinging jazz, Latin jazz, rhythm and blues, funk, and hip-hop music.

**DANCE 201-0 Dance in/as Culture (1 Unit)** A cultural approaches understanding to dance. Politics, identity, feminism, semiotics, and critical race theories are among the ideas that intersect with dances and choreographies to help understand how dance is both in and functions as culture. Prerequisite: DANCE 101-1 or approval of instructor.

**DANCE 202-0 Anatomy (1 Unit)** The language and analysis of anatomy; heightening of bodily awareness using kinesthetic sensation and imagery. Combines theory and practice to achieve both intellectual and experiential awareness of the kinesthetics of anatomy.

**DANCE 215-0 Dance Histories (1 Unit)** A global approach to histories of dance. Readings, discussion, video screenings, movement analysis, embodied workshops, and research.

**DANCE 225-0 Dance Composition (1 Unit)** Fundamental choreographic elements: time, space, shape, form, dynamics, and design. Choreographic exploration of the basic principles of dance composition.

**DANCE 230-0 Music Theatre Dance II (0.34 Unit)** Advanced class focusing on a range of Broadway choreography, dance styles, specialty forms, and audition technique. Taken during junior or senior year.

**DANCE 235-0 Choreography for Musical Theatre (1 Unit)** How to manipulate space, time, and energy in short movement studies; creating a movement study in dramatic action that relies on those manipulations; choreographing a short dance using the previous movement studies as guideposts.

**DANCE 250-0 Modern/Contemporary II (0.34 Unit)** Offered at levels I, II, and III each quarter to develop skills pertaining to modern/contemporary techniques. Higher levels progress more rapidly with a greater level of complexity, as class work focuses on a wider range of qualities and aesthetics. Style of modern technique varies with each instructor.

**DANCE 260-0 Dances of the African Diaspora II (0.34 Unit)** Offered at levels I, II, and III to expose students to a variety of techniques that come from Black diasporic practices which may include: jazz, tap, hip hop, West African, Afro-contemporary. As class advances, students learn more advanced rhythmic phrases, more complex body-part isolations, and quicker direction changes in space. Style varies with each instructor.

**DANCE 261-0 Jump Rhythm Technique II (0.34 Unit)** Offered at levels I and II. Dancing rhythmically; using jazz rhythms and the syncopated rhythms of funk, hip-hop, and other rock-based music to generate all dance movement.

**DANCE 270-0 Classical Dance II (0.34 Unit)** Offered at levels I, II, and III to cover classical dances from basic principles through advanced skills. Terminology and movements are based on class level. Classical dance can encompass ballet but also dance forms from across the globe (e.g., India, Cambodia, China, Korea, West Africa). Classical dance style varies with instructor.

**DANCE 281-0 Jump Rhythm Tap II (0.34 Unit)** Offered at levels I and II. Using not only the feet but other parts of the body as well to "play" the syncopated rhythms of swinging jazz, Latin jazz, rhythm and blues, funk, and hip-hop music. Tap technique. One level is offered each quarter,

started at the beginning level. The fundamentals of tap are developed through each level, and rhythmic awareness is expanded.

**DANCE 315-0 Dance Criticism (1 Unit)**

Critical and theoretical thought of writers on Western theatrical dance.

**DANCE 325-0 Advanced Choreographic Study (1 Unit)** This class offers an intermediate-level exploration of choreographic elements for experimental dance-making: time, flow, rhythm, musicality, spatial awareness, shape, form, dynamics, and design. Focus is on trio and group work in addition to other experimental performance modalities. Prerequisite: DANCE 225-0 or consent of instructor.

**DANCE 326-0 Advanced Improvisation (1 Unit)**

Improvisation as a source for composition and performance. This class is for performance makers who wishing to expand dance vocabulary and for dancers exploring experimental choices in their work .

Prerequisite: DANCE 225-0, DANCE 110-0 and 1 unit of technique or consent of instructor.

**DANCE 335-0 Special Topics in Dance Research (1 Unit)** Research methodologies, dance scholarship, criticism, and historical reconstruction. Critical issues and contemporary problems. Content varies.

**DANCE 345-0 Studies in Collaboration (1 Unit)**

Workshop exploration of collaboration as well as historical and theoretical perspectives. Through studio work, reading, and discussion, students in the class work across SoC to devise live art together. Content varies depending on instructor. Open to Theatre, Dance, MTCP, Performance Studies, and Music students.

**DANCE 350-0 Modern/Contemporary III (0.34 Unit)** Offered at levels I, II, and III each quarter to develop skills pertaining to modern/contemporary techniques. Higher levels progress more rapidly with a greater level of complexity, as class work focuses on a wider range of qualities and aesthetics. Style of modern technique varies with each instructor.

**DANCE 355-0 Dance in Education (1 Unit)**

Organizing and teaching dance technique and creative movement for children and adolescents. Creative play, movement exploration, acquisition of basic motor skills, links to the classroom. Lecture, laboratory, and field experiences.

**DANCE 356-0 Expressive Arts Therapy (1 Unit)**

Overview of dance, drama, and art therapies for treating disabled, mentally ill, or other special populations. Introduces diverse theoretical perspectives in the role and use of art forms as therapeutic modalities. Symbolic meaning, group dynamics, and the language of movement as it relates to personality, body image, and expression.

**DANCE 360-0 Dances of the African Diaspora III (0.34 Unit)** Offered at levels I, II, and III to expose students to a variety of techniques that come from Black diasporic practices which may include: jazz, tap, hip hop, West African, Afro-contemporary. As class advances, students learn more advanced rhythmic phrases, more complex body-part isolations, and quicker direction changes in space. Style of jazz technique varies with each instructor.

**DANCE 365-0 American Rhythm Dancing & the African American**

**Performance Aesthetic (1 Unit)** Viewing (via video) and evaluating the sources and contemporary influences of jazz, tap, Broadway, and other vernacular forms of theatre dance. Light movement exercises to convey the kinesthetic basis of American rhythm dancing.

**DANCE 370-0 Classical Dance III (0.34 Unit)** Offered at levels I, II, and III to cover classical dances from basic principles through advanced skills. Terminology and movements are based on class level. Classical dance can encompass ballet but also dance forms from across the globe (e.g.,

India, Cambodia, China, Korea, West Africa). Classical dance style varies with instructor.

**DANCE 375-0 Summer Dance Institute (1 Unit)** One-week summer workshop exploring various forms of dance with guest artists.

**DANCE 380-0 Tap III (0.34 Unit)** Tap technique. One level is offered each quarter, starting at beginning level. The fundamentals of tap are developed through each level, and rhythmic awareness is expanded.

**DANCE 395-1 Senior Seminar (0 Unit)** A forum for addressing issues of transition, career planning, and support, providing a structure for analyzing opportunities in the professional dance world. The seminar is also responsible for creating and producing the Senior Concert, the culminating activity of the dance major. The course meets as a yearlong sequence with grade and 1 credit unit awarded in the spring.

**DANCE 395-2 Senior Seminar (0 Unit)**

**DANCE 395-3 Senior Seminar (1 Unit)**

**DANCE 399-0 Independent Study (1 Unit)** Prerequisite: consent of undergraduate dean after submission of petition.

## Dance Major

<https://communication.northwestern.edu/academics/theatre/undergraduate-programs/major-dance.htm> (<https://communication.northwestern.edu/academics/theatre/undergraduate-programs/major-dance.html>)

The Department of Theatre also offers a major in dance.

The dance major prepares students for further advanced academic work or a wide range of positions in the dance field. The major's comprehensive curriculum emphasizes the study of dance as well as the act of dancing, providing students with robust opportunities for writing, research, and analysis in the field, in addition to the study of dance techniques and choreography. The program supports a number of dance organizations, and offers many performing opportunities.

The primary principle that undergirds the dance major is a belief that movement is the foundation for liberatory possibility. The study of dance within the liberal arts context allows students to connect with their bodies, and think critically and creatively about the world they live in *through* their bodies and dance-making practices. Students' other interdisciplinary fields of study are incorporated into a holistic understanding of what it means to be a thinking-feeling individual in community with others. In both studies and studio settings, students ultimately cultivate creative collectivity through an awareness of critical difference and are prepared intellectually and artistically for lifetime involvement in the field.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Major Requirements (13 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

### Introductory Courses (3 units)

Course	Title
DANCE 101-1	Introduction to Dance Studies
DANCE 101-2	Dance as Creative Collaboration
DANCE 225-0	Dance Composition

### Dance Technique Courses (3 units)

A minimum of 3 units from the following list (each dance technique class carries .34 units; 3 classes add up to 1.02 unit of credit). Each unit of technique must be taken in a chosen dance category (e.g., 3 classes in Modern/Contemporary, 3 classes in Basic Theatrical Dance, etc.). Classes need not be taken at the same level or in any particular order; students are free to choose which technique categories they study.

#### General Technique Courses

Course	Title
DANCE 110-0	Movement for the Stage

#### Music Theatre Dance

Course	Title
DANCE 130-0	Music Theatre Dance I
DANCE 230-0	Music Theatre Dance II

#### Basic Theatrical Dance

Course	Title
DANCE 140-1	Basic Theatrical Dance I
DANCE 140-2	Basic Theatrical Dance II
DANCE 140-3	Basic Theatrical Dance III

#### Modern/Contemporary

Course	Title
DANCE 150-0	Modern/Contemporary I
DANCE 250-0	Modern/Contemporary II
DANCE 350-0	Modern/Contemporary III

#### Dances of the African Diaspora

Course	Title
DANCE 160-0	Dances of the African Diaspora I
DANCE 260-0	Dances of the African Diaspora II
DANCE 360-0	Dances of the African Diaspora III

#### Jump Rhythm

Course	Title
DANCE 161-0	Jump Rhythm Technique 1
DANCE 261-0	Jump Rhythm Technique II
DANCE 181-0	Jump Rhythm Tap 1
DANCE 281-0	Jump Rhythm Tap II

#### Classical Dance

Course	Title
DANCE 170-0	Classical Dance I
DANCE 270-0	Classical Dance II
DANCE 370-0	Classical Dance III

#### Jazz Dance

Course	Title
DANCE 180-1	Funk Jazz
DANCE 180-2	Theatre Jazz
DANCE 180-3	Street Jazz

## Additional Dance Courses (7 Units)

At least 6 courses chosen from the following options, plus 1 enrollment in DANCE 399-0 Independent Study during senior year:

### Full-Credit Dance Courses

Course	Title
DANCE 201-0	Dance in/as Culture
DANCE 202-0	Anatomy
DANCE 215-0	Dance Histories
DANCE 235-0	Choreography for Musical Theatre
DANCE 315-0	Dance Criticism
DANCE 325-0	Advanced Choreographic Study
DANCE 326-0	Advanced Improvisation
DANCE 335-0	Special Topics in Dance Research
DANCE 345-0	Studies in Collaboration
DANCE 375-0	Summer Dance Institute
DANCE 399-0	Independent Study <sup>1</sup>
DANCE 465-0	Studies in Dance

<sup>1</sup> No limit per degree, but only 1 DANCE 399-0 Independent Study can be applied to the Dance Major requirements.

## School Requirements (1 unit)

### First-Year Seminar (1 unit)

Course	Title
CMN 101-0	SoC First Year Seminar: Interdisciplinary Topics in Communication Arts & Sciences

### SoC Capstone

This requirement can be fulfilled by a combination of CMN 398-1 and CMN 398-2. Other courses may be appropriate as substitutions for CMN 398-1 and/or CMN 398-2. Students may consult with their SoC academic advisor if they have questions about appropriate substitutions.

Course	Title
CMN 398-1	SoC Capstone: Lecture
CMN 398-2	SoC Capstone: Lab

## Additional Requirements (28 units)

### Distribution Requirements (18 units)

18 units of credit outside the school, including 8 units of credit from the School of Communication distribution areas: 2 from science, mathematics, and technology; 3 from individual and social behavior; and 3 from humanities and fine arts. In addition, 3 courses must be at the 200 level or above, and 3 courses must be at the 300 level or above.

### Electives (10 units)

Electives in communication and other areas to complete a minimum of 42 units of credit.

## Department Honors

The Dance Program encourages students who have demonstrated academic excellence in the dance major to participate in the Theatre Honors Program. Students work closely with a faculty member to design, execute and present a research project that delves into the study of Dance. Contact the Dance Program for more information on eligibility and requirements.

## Dance Minor

<https://communication.northwestern.edu/academics/theatre/undergraduate-programs/minor-dance.html>

The dance minor offered by the Department of Theatre introduces students to many areas of study within the dance world, as well as providing abundant opportunities to contribute to the field. Students have the opportunity to explore dance studies, writing and analysis, in addition to dance techniques and performance.

All students are eligible for this minor, as space allows.

Admission to the minor is by application. Applications are available in winter quarter so that students may begin the minor in spring quarter. Students must demonstrate academic progress beyond technique study within the first full year of enrollment in the minor.

## Minor Requirements (6.68 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor.

### Core courses (3 units):

Course	Title
DANCE 101-1	Introduction to Dance Studies
DANCE 101-2	Dance as Creative Collaboration
DANCE 225-0	Dance Composition

### Technique Courses (1.68 units)

A minimum of 1.68 units from the following list (each dance technique class carries .34 units; 3 classes add up to 1.02 unit of credit). One full unit of technique (3 classes) must be taken in a chosen dance category (e.g., 3 classes in Modern/Contemporary, 3 classes in Basic Theatrical Dance, etc.). The other .68 units can be from any category. Classes need not be taken at the same level or in any particular order; students are free to choose which technique categories they study.

#### General Technique Courses

Course	Title
DANCE 110-0	Movement for the Stage

#### Music Theatre Dance

Course	Title
DANCE 130-0	Music Theatre Dance I
DANCE 230-0	Music Theatre Dance II

#### Basic Theatrical Dance

Course	Title
DANCE 140-1	Basic Theatrical Dance I
DANCE 140-2	Basic Theatrical Dance II
DANCE 140-3	Basic Theatrical Dance III

#### Modern/Contemporary

Course	Title
DANCE 150-0	Modern/Contemporary I
DANCE 250-0	Modern/Contemporary II
DANCE 350-0	Modern/Contemporary III

**Dances of the African Diaspora**

Course	Title
DANCE 160-0	Dances of the African Diaspora I
DANCE 260-0	Dances of the African Diaspora II
DANCE 360-0	Dances of the African Diaspora III

**Jump Rhythm**

Course	Title
DANCE 161-0	Jump Rhythm Technique 1
DANCE 261-0	Jump Rhythm Technique II
DANCE 181-0	Jump Rhythm Tap 1
DANCE 281-0	Jump Rhythm Tap II

**Classical Dance**

Course	Title
DANCE 170-0	Classical Dance I
DANCE 270-0	Classical Dance II
DANCE 370-0	Classical Dance III

**Jazz Dance**

Course	Title
DANCE 180-1	Funk Jazz
DANCE 180-2	Theatre Jazz
DANCE 180-3	Street Jazz

**Dance Elective Courses (2 units)**

2 full-credit electives reflecting the student's special interests (a dance technique sequence may not be used to satisfy this requirement).

**Dance Elective List**

Course	Title
DANCE 201-0	Dance in/as Culture
DANCE 202-0	Anatomy
DANCE 215-0	Dance Histories
DANCE 235-0	Choreography for Musical Theatre
DANCE 315-0	Dance Criticism
DANCE 325-0	Advanced Choreographic Study
DANCE 326-0	Advanced Improvisation
DANCE 335-0	Special Topics in Dance Research
DANCE 345-0	Studies in Collaboration
DANCE 375-0	Summer Dance Institute
DANCE 399-0	Independent Study
DANCE 465-0	Studies in Dance

**Music Theatre Certificate**

<https://communication.northwestern.edu/academics/theatre/undergraduate-programs/music-theatre-certificate.html>

The Music Theatre Certificate supports emerging artists from The School of Communication majoring in theatre, dance, or performance studies and the Bienen School of Music students majoring in voice to create a second area of specialization that is important to their development as musical theatre artists.

The program provides training in acting and other theatre courses for voice majors. Theatre, dance, and performance studies majors will have voice classes and exposure to different music offerings. Students must remain in the theatre, dance, performance studies, or voice major to

remain in the Music Theatre Certificate program; students who leave an eligible major for a non-eligible one will be required to leave the program.

Interested students may interact with faculty and curriculum in their 1st and 2nd years through quarterly workshops and various course offerings. Only second-year students enrolled as theatre, dance, or performance studies majors in the School of Communication or as voice majors in the Bienen School of Music are eligible to interview for the Music Theatre Certificate; other students will not be admitted. Interviews will be held each winter quarter for admission to the certificate commencing fall of the junior year. Students are required to present a performance piece (solo or group) or portfolio (scores, manuscripts, directorial design concepts, etc.) and participate in an interview with the Area Director and select faculty about their goals and prospective outcomes.

## **Program Requirements for Theatre, Dance, and Performance Studies Majors (9 units)**

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

### · Applied Voice (3 units)

Course	Title
THEATRE 251-1	Intermediate Voice I
& THEATRE 251-2	and Intermediate Voice II
& THEATRE 251-3	and Intermediate Voice III
THEATRE 351-1	Advanced Voice I
& THEATRE 351-2	and Advanced Voice II
& THEATRE 351-3	and Advanced Voice III

### · Music Theatre Techniques (3 units)

Course	Title
THEATRE 252-0	Intermediate MT Techniques
THEATRE 352-1 & THEATRE 352-2	Advanced Music Theatre Techniques I and Advanced Music Theatre Techniques II (2 units)

### · Musicianship and Music Theatre History (2 units)

Course	Title
THEATRE 253-0	Music Theatre History
THEATRE 256-0	Musicianship for Actors

### · Dance (0.34 unit) 1 Class from Group A: Music Theatre Dance

Course	Title
DANCE 130-0	Music Theatre Dance I
DANCE 230-0	Music Theatre Dance II
DANCE 161-0	Jump Rhythm Technique 1
DANCE 261-0	Jump Rhythm Technique II
DANCE 181-0	Jump Rhythm Tap 1
DANCE 281-0	Jump Rhythm Tap II

### · Dance (0.68 unit) 2 Classes from Group B: Dance Movement Elective

Course	Title
DANCE 110-0	Movement for the Stage
DANCE 120-0	Topics in Preparation for Performance

DANCE 140-1	Basic Theatrical Dance I
DANCE 140-2	Basic Theatrical Dance II
DANCE 140-3	Basic Theatrical Dance III
DANCE 150-0	Modern/Contemporary I
DANCE 160-0	Dances of the African Diaspora I
DANCE 161-0	Jump Rhythm Technique 1
DANCE 170-0	Classical Dance I
DANCE 180-1	Funk Jazz
DANCE 180-2	Theatre Jazz
DANCE 180-3	Street Jazz
DANCE 181-0	Jump Rhythm Tap 1
DANCE 250-0	Modern/Contemporary II
DANCE 260-0	Dances of the African Diaspora II
DANCE 261-0	Jump Rhythm Technique II
DANCE 270-0	Classical Dance II
DANCE 281-0	Jump Rhythm Tap II
DANCE 350-0	Modern/Contemporary III
DANCE 360-0	Dances of the African Diaspora III
DANCE 370-0	Classical Dance III
DANCE 380-0	Tap III

DANCE 140-2	Basic Theatrical Dance II
DANCE 140-3	Basic Theatrical Dance III
DANCE 150-0	Modern/Contemporary I
DANCE 160-0	Dances of the African Diaspora I
DANCE 161-0	Jump Rhythm Technique 1
DANCE 170-0	Classical Dance I
DANCE 180-1	Funk Jazz
DANCE 180-2	Theatre Jazz
DANCE 180-3	Street Jazz
DANCE 181-0	Jump Rhythm Tap 1
DANCE 250-0	Modern/Contemporary II
DANCE 260-0	Dances of the African Diaspora II
DANCE 261-0	Jump Rhythm Technique II
DANCE 270-0	Classical Dance II
DANCE 281-0	Jump Rhythm Tap II
DANCE 350-0	Modern/Contemporary III
DANCE 360-0	Dances of the African Diaspora III
DANCE 370-0	Classical Dance III
DANCE 380-0	Tap III

- Design, Dance, or Acting Elective (1 unit)

#### Program Requirements for Voice Majors (9 units)

##### • 3 Quarters of Acting (3 units)

Course	Title
THEATRE 273-1	Acting I
THEATRE 273-2	Acting I
THEATRE 273-3	Acting I

##### • Music Theatre Techniques (3 units)

Course	Title
THEATRE 252-0	Intermediate MT Techniques
THEATRE 352-1	Advanced Music Theatre Techniques I
THEATRE 352-2	Advanced Music Theatre Techniques II

##### • Music Theatre History (1 unit)

Course	Title
THEATRE 253-0	Music Theatre History

##### • Dance (0.34 unit) 1 Class from Group A: Music Theatre Dance

Course	Title
DANCE 130-0	Music Theatre Dance I
DANCE 230-0	Music Theatre Dance II
DANCE 161-0	Jump Rhythm Technique 1
DANCE 261-0	Jump Rhythm Technique II
DANCE 181-0	Jump Rhythm Tap 1
DANCE 281-0	Jump Rhythm Tap II

##### • Dance (0.68 unit) 2 Classes from Group B: Dance/Movement Elective

Course	Title
DANCE 110-0	Movement for the Stage
DANCE 120-0	Topics in Preparation for Performance
DANCE 140-1	Basic Theatrical Dance I

## Theatre Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### Major Requirements (12 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

#### Introductory Courses (3 units)

Course	Title
THEATRE 160-1	Introduction to Theatrical Performance
THEATRE 160-2	Introduction to Theatrical Contexts and Research <sup>1</sup>
THEATRE 160-3	Introduction to Theatrical Design and Management

<sup>1</sup> Students who fail to earn a C- or higher in the course are required to take ENGLISH 105-0 Expository Writing and one additional history, literature, or criticism course for the major.

#### Advanced Courses (9 units)

- Five courses in Theatre at the 200 level or above
- Four courses in Theatre at the 300 level or above
- At least 2 courses in each of the following areas (200- and 300-level courses in the lists fulfill advanced course requirements):

##### • Performance (2 courses)

Course	Title
THEATRE 171-0	Basic Acting
THEATRE 211-0	Fundamentals of Stage Directing
THEATRE 231-0	Theatre for Young Audiences
THEATRE 252-0	Intermediate MT Techniques
THEATRE 255-0	Creating the Musical
THEATRE 256-0	Musicianship for Actors
THEATRE 272-0	Voice for Shakespeare

THEATRE 273-1 & THEATRE 273-2 & THEATRE 273-3	Acting I and Acting I and Acting I
THEATRE 281-0	Intro to Playwriting
THEATRE 310-0	Special Topics in Directing
THEATRE 311-0	Advanced Stage Directing 04A45
THEATRE 330-0	Special Topics in TYA
THEATRE 332-1	The Art of Storytelling
THEATRE 332-2	Advanced Storytelling
THEATRE 333-1	Creative Drama
THEATRE 333-2	Advanced Creative Drama
THEATRE 343-0	Puppetry History & Performance
THEATRE 350-0	Special Topics in Musical Theatre
THEATRE 352-1	Advanced Music Theatre Techniques I
THEATRE 352-2	Advanced Music Theatre Techniques II
THEATRE 353-0	Musical Theatre Techniques for Non-Music Theatre Cert
THEATRE 354-0	Musical Theatre Repertoire
THEATRE 355-0	Advanced Creating the Musical
THEATRE 356-0	Advanced Musicianship for Actors: Theatre Styles and Genres
THEATRE 358-0	Showcase
THEATRE 359-0	Senior Audition Techniques
THEATRE 361-0	Partnered Swing Dancing
THEATRE 362-0	Standing Down Straight for Actors
THEATRE 373-1 & THEATRE 373-2 & THEATRE 373-3	Acting II: Analysis and Performance and Acting II: Analysis and Performance and Acting II: Analysis and Performance
THEATRE 370-0	Special Topics in Acting
THEATRE 372-0	Advanced Voice Styles
THEATRE 374-0	Dialects for the Stage
THEATRE 375-0	Advanced Acting Topics
THEATRE 376-0	Intro to Acting for the Screen
THEATRE 377-0	Topics in Acting for the Screen
THEATRE 378-0	Advanced Acting for Screen
THEATRE 380-0	Special Topics in Playwriting
THEATRE 382-0	Playwriting Genres
THEATRE 383-1 & THEATRE 383-2 & THEATRE 383-3	Advanced Playwriting Sequence and Advanced Playwriting Sequence and Advanced Playwriting Sequence

• **Design/Management (2 courses)**

Course	Title
THEATRE 220-0	Introduction to Theatre Design
THEATRE 221-1	Design Process: Scene
THEATRE 221-2	Design Process: Costume
THEATRE 221-3	Design Process: Lighting
THEATRE 222-0	Stage Makeup
THEATRE 223-0	Theatre Sound
THEATRE 292-0	Introduction to Stage Management
THEATRE 310-0	Special Topics in Directing (Toy Theatre )
THEATRE 319-0	Creative Process: Envisioning the Theatrical Figure
THEATRE 321-1	Advanced Design Process: Scene
THEATRE 321-2	Advanced Design Process: Costume
THEATRE 321-3	Advanced Design Process: Lighting
THEATRE 322-0	History of Costume and Decor
THEATRE 323-0	Advanced Theatre Sound

THEATRE 324-0	Scene Painting
THEATRE 325-1	Drawing and Painting for the Theatre: Graphic Arts for the Stage Designer
THEATRE 325-2	Drawing and Painting for the Theatre: Rendering the Theatrical Space
THEATRE 325-4	Drawing & Painting for the Theatre: Drafting
THEATRE 326-1	Drawing and Painting for the Theatre: Freehand Drawing
THEATRE 326-2	Drawing and Painting for the Theatre: The Figure in Space
THEATRE 327-0	Textile Arts and Crafts
THEATRE 328-1	Period Pattern Drafting and Draping
THEATRE 328-2	Period Pattern Drafting and Draping
THEATRE 328-3	Period Pattern Drafting and Draping
THEATRE 329-0	Computer Graphics for the Theatre Artist
THEATRE 343-0	Puppetry History & Performance
THEATRE 357-0	Orchestration
THEATRE 390-0	Special Topics in Management
THEATRE 392-0	Advanced Stage Management
THEATRE 393-0	Production Management
THEATRE 397-0	Theatre Marketing
THEATRE 396-0	Theatre Management and Arts Leadership
ART 210-0	Introduction to Drawing
ART 220-0	Introduction to Painting
ART 230-0	Introduction to Time Based Arts
ART 240-0	Introduction to Sculpture (requires introductory course)
ART 250-0	Introduction to Photography
ART_HIST 232-0	Introduction to the History of Architecture: 1400 to Present
DSGN 208-0	Design Thinking and Doing
MUS_COMP 211-0	Class Composition
MUS_TECH 300-0	Introduction to Music Technology
RTVF 190-0	Media Construction
RTVF 383-0	Introduction to Sound Production

- At least 3 courses in the following area (200- and 300-level courses in the lists fulfill advanced course requirements):

• **History, Literature, Criticism, and Theory (3 courses)**

Course	Title
THEATRE 240-0	Special Topics in Theatre Studies
THEATRE 241-1	Theatre History I: Pre-1650
THEATRE 242-0	Topics in Shakespeare
THEATRE 244-1	Modern & Contemp Theatre: Modern
THEATRE 244-2	Modern & Contemp Theatre: Contemporary
THEATRE 245-0	Theatre of the Americas
THEATRE 253-0	Music Theatre History
THEATRE 313-0	History of Directing
THEATRE 340-0	Special Topics in Advanced Theatre Studies
THEATRE 341-0	Theatre and Social Change
THEATRE 342-0	Dramaturgy
THEATRE 343-0	Puppetry History & Performance
THEATRE 344-0	Gender & Performance
THEATRE 345-0	African American Theatre
THEATRE 346-0	Asian American Theatre
THEATRE 347-0	Latinx Theatre
THEATRE 348-0	Transnational Theatre
CLASSICS 340-0	Greek and Roman Drama

DANCE 201-0	Dance in/as Culture
DANCE 215-0	Dance Histories
DANCE 315-0	Dance Criticism
DANCE 335-0	Special Topics in Dance Research
ENGLISH 212-0	Introduction to Drama
ENGLISH 234-0	Introduction to Shakespeare
ENGLISH 312-0	Studies in Drama
ENGLISH 322-0	Medieval Drama
ENGLISH 332-0	Renaissance Drama
ENGLISH 339-0	Studies in Shakespeare
FRENCH 272-0	Introducing Theatre
FRENCH 279-0	Theater in Translation
GNDR_ST 362-0	Gender, Sexuality, and Drama
GNDR_ST 372-0	Gender, Sexuality, and Performance
GERMAN 324-0	Modern German Drama
PERF_ST 200-0	Introduction to Performance Studies
PERF_ST 305-0	Performance Theory
PERF_ST 321-0	Performance, Sex, and Censorship
PERF_ST 336-0	Latino/a Performance
RTVF 322-0	Radio/Television/Film Genre (Genre: Musicals from Stage to Screen)
SLAVIC 369-0	Russian Drama

sustained project in their senior year. It exposes majors to the rigors of research and creative work comparable with graduate-level programs in theatre studies and offers preparation for future graduate-level study. Projects may be proposed in any area of the theatre department's pursuits (design, directing, choreography, performance, history, criticism, or playwriting), provided that supervisory personnel is available and willing to participate, and provided that appropriate facilities are available.

Eligibility for the honors program will be determined by the faculty. Contact the theatre department for more information.

## Theatre Minor

<https://communication.northwestern.edu/academics/theatre/undergraduate-programs/minor-theatre.html>

The minor in theatre encourages students majoring in other fields to organize their theatre studies in a coherent manner. The minor requires students to gain both depth and breadth in the study and practice of theatre.

## Minor Requirements (7 units)

All courses for SoC majors, minors, fields of concentration and distribution requirements must be completed with a grade of C- or higher and may not be taken P/N.

A maximum of the equivalent of 2 non-Northwestern academic units can count towards an SoC minor.

7 courses including at least 3 at the 300-level.

At least 5 of the 7 courses for the minor must be offered by the theatre department; the other 2 may be approved courses in departments or programs outside theatre (e.g., performance studies, gender studies, comparative literature).

## 2 courses in History, Literature, Criticism, and Theory

Course	Title
THEATRE 240-0	Special Topics in Theatre Studies
THEATRE 241-1	Theatre History I: Pre-1650
THEATRE 242-0	Topics in Shakespeare
THEATRE 244-1	Modern & Contemp Theatre: Modern
THEATRE 244-2	Modern & Contemp Theatre: Contemporary
THEATRE 245-0	Theatre of the Americas
THEATRE 253-0	Music Theatre History
THEATRE 313-0	History of Directing
THEATRE 340-0	Special Topics in Advanced Theatre Studies
THEATRE 341-0	Theatre and Social Change
THEATRE 342-0	Dramaturgy
THEATRE 343-0	Puppetry History & Performance
THEATRE 344-0	Gender & Performance
THEATRE 345-0	African American Theatre
THEATRE 346-0	Asian American Theatre
THEATRE 347-0	Latinx Theatre
THEATRE 348-0	Transnational Theatre
DANCE 201-0	Dance in/as Culture
DANCE 215-0	Dance Histories
DANCE 315-0	Dance Criticism
DANCE 335-0	Special Topics in Dance Research (Topic approval required)

## School Requirements (1 unit)

### First-Year Seminar (1 unit)

Course	Title
CMN 101-0	SoC First Year Seminar: Interdisciplinary Topics in Communication Arts & Sciences

### SoC Capstone

This requirement can be fulfilled by a combination of CMN 398-1 and CMN 398-2. Other courses may be appropriate as substitutions for CMN 398-1 and/or CMN 398-2. Students may consult with their SoC academic advisor if they have questions about appropriate substitutions.

Course	Title
CMN 398-1	SoC Capstone: Lecture
CMN 398-2	SoC Capstone: Lab

## Additional Requirements (29 units)

### Distribution Requirements (18 units)

18 units of credit outside the department, including 2 units of credit from science, mathematics, and technology and 3 each from individual and social behavior and humanities and fine arts.

### Electives (11 units)

Electives in communication and other areas to complete a minimum of 42 units of credit.

### Courses Outside Communication

6 courses outside Communication, including three 200-level courses, and three 300-level courses. Courses taken to satisfy this requirement may fulfill distribution or elective course requirements.

## Honors in Theatre

The honors program provides theatre majors who have demonstrated records of academic achievement with the opportunity to explore a

CLASSICS 340-0	Greek and Roman Drama	THEATRE 326-1	Drawing and Painting for the Theatre: Freehand Drawing
ENGLISH 212-0	Introduction to Drama	THEATRE 326-2	Drawing and Painting for the Theatre: The Figure in Space
ENGLISH 234-0	Introduction to Shakespeare	THEATRE 327-0	Textile Arts and Crafts
ENGLISH 312-0	Studies in Drama	THEATRE 328-1	Period Pattern Drafting and Draping
ENGLISH 322-0	Medieval Drama	THEATRE 328-2	Period Pattern Drafting and Draping
ENGLISH 332-0	Renaissance Drama	THEATRE 328-3	Period Pattern Drafting and Draping
ENGLISH 339-0	Studies in Shakespeare	THEATRE 329-0	Computer Graphics for the Theatre Artist
FRENCH 272-0	Introducing Theatre	THEATRE 357-0	Orchestration
FRENCH 279-0	Theater in Translation	THEATRE 392-0	Advanced Stage Management
GNDR_ST 362-0	Gender, Sexuality, and Drama	THEATRE 393-0	Production Management
GNDR_ST 372-0	Gender, Sexuality, and Performance	RTVF 190-0	Media Construction
GERMAN 324-0	Modern German Drama	RTVF 383-0	Introduction to Sound Production
PERF_ST 200-0	Introduction to Performance Studies	ART 210-0	Introduction to Drawing
PERF_ST 305-0	Performance Theory	ART 220-0	Introduction to Painting
PERF_ST 321-0	Performance, Sex, and Censorship	ART 240-0	Introduction to Sculpture
PERF_ST 336-0	Latino/a Performance	ART 250-0	Introduction to Photography
SLAVIC 369-0	Russian Drama	DSGN 208-0	Design Thinking and Doing

**1 course in Performance**

Course	Title
THEATRE 171-0	Basic Acting
THEATRE 211-0	Fundamentals of Stage Directing
THEATRE 231-0	Theatre for Young Audiences
THEATRE 271-0	Intermediate Acting
THEATRE 281-0	Intro to Playwriting
THEATRE 330-0	Special Topics in TYA
THEATRE 332-1	The Art of Storytelling
THEATRE 332-2	Advanced Storytelling
THEATRE 333-1	Creative Drama
THEATRE 333-2	Advanced Creative Drama
THEATRE 361-0	Partnered Swing Dancing
THEATRE 380-0	Special Topics in Playwriting
THEATRE 382-0	Playwriting Genres
THEATRE 383-1	Advanced Playwriting Sequence
THEATRE 383-2	Advanced Playwriting Sequence
THEATRE 383-3	Advanced Playwriting Sequence

2 additional courses in one of the above areas to form a required concentration.

1 theatre elective course (any course within the Theatre Department).

NOTE: The sequence of courses in acting (273-1,2,3; 373-1,2,3) is open solely to theatre majors due to the space limitations of these courses. Declaring a theatre minor will not provide access to these courses.

**1 course in Design/Management**

Course	Title
THEATRE 220-0	Introduction to Theatre Design
THEATRE 221-1	Design Process: Scene
THEATRE 221-2	Design Process: Costume
THEATRE 221-3	Design Process: Lighting
THEATRE 222-0	Stage Makeup
THEATRE 223-0	Theatre Sound
THEATRE 292-0	Introduction to Stage Management
THEATRE 310-0	Special Topics in Directing (Toy Theatre)
THEATRE 319-0	Creative Process: Envisioning the Theatrical Figure
THEATRE 320-0	Special Topics in Theatre Design
THEATRE 321-1	Advanced Design Process: Scene
THEATRE 321-2	Advanced Design Process: Costume
THEATRE 321-3	Advanced Design Process: Lighting
THEATRE 325-1	Drawing and Painting for the Theatre: Graphic Arts for the Stage Designer
THEATRE 325-2	Drawing and Painting for the Theatre: Rendering the Theatrical Space
THEATRE 325-4	Drawing & Painting for the Theatre: Drafting

# SCHOOL OF EDUCATION AND SOCIAL POLICY

[sesp.northwestern.edu](http://sesp.northwestern.edu)

The mission of the School of Education and Social Policy is to understand and improve learning communities, defined as groups of people working together in structured social and/or technical environments that influence human development. Learning communities include not only schools and classrooms but also workplaces, families, neighborhoods, and other societal arrangements where learning takes place. Through broad-based interdisciplinary research, teaching, and outreach activities, SESP's faculty strive to better understand how social, psychological, and economic factors shape human development and learning and how innovations in pedagogy, technology, and social policies can benefit lives. They learn to understand human development and improve learning in its various social contexts by applying the social and behavioral sciences.

The school provides undergraduates with an interdisciplinary curriculum, practical experiences, and research activities that are closely linked to its faculty and graduate programs. Six concentrations lead to the degree of bachelor of science in education and social policy. The intellectual core of the human development in context and social policy concentrations comes from SESP's human development and social policy graduate program. The intellectual core of the learning and organizational change, learning sciences, elementary teaching and secondary teaching concentrations is grounded in the school's learning sciences graduate program.

The six concentrations offer preparation for a number of career options. Students are encouraged to design their concentrations with career objectives or graduate and professional school admission policies in mind. They enroll with a wide variety of academic and career goals. Some intend to go immediately to graduate and professional schools, while others plan to enter a profession upon graduation.

Students in Northwestern's other schools may choose to complete the requirements of SESP's secondary teaching concentration in order to qualify for teacher certification. Pathways to the accelerated master's in elementary and secondary teaching (<https://sesp.northwestern.edu/graduate-professional/teaching-learning-and-education/accelerated-msed-northwestern-undergraduates/>) are available to all undergraduates.

SESP offers advanced degrees and programs in elementary and secondary teaching, higher education administration and policy, applied economics and social and economic policy, learning and organizational change, learning sciences, and human development and social policy.

## Academic Policies

### Requirements for the Bachelor's Degree in Education and Social Policy

A minimum of 42 course units are required for the degree of bachelor of science in education and social policy. The concentrations in human development in context, learning and organizational change, learning sciences, and social policy have similar foundational discipline and core requirements, though each has different major courses. The new elementary teaching curriculum follows the Illinois Board of Education requirements, and includes the foundational discipline and core requirements similar to the other concentrations. The secondary teaching

curriculum is markedly different, largely due to Illinois Board of Education requirements.

### Grade and Registration Requirements

The following requirements concerning grade point average (GPA) and registration apply to all students seeking the bachelor's degree:

- 42 course units are required for graduation.
- Students are required to maintain a minimum GPA of 2.0 in all work presented for the degree. To qualify for teacher certification, students must earn a minimum grade of C+ in all professional core courses/foundational courses and maintain minimum GPAs of 2.5 overall and 3.0 in teaching subject-area. In order to maintain a 3.0 in their teaching subject area, students must earn a minimum grade of C in subject-area courses. Subject-area courses earning a grade of C- or below will require conversation with a student's academic advisor and may require retaking the course. Students in the human development in context, learning and organizational change, learning sciences, and social policy concentrations must earn a minimum grade of C- in all foundational discipline requirements, core courses, and concentration courses.
- Full-time students may elect to enroll in some Northwestern courses with the understanding that they will not receive a regular letter grade but the notation P (pass) or N (no credit). They may elect 1 unit per quarter under the P/N option, which may be used only toward elective requirements.
- Not more than six of the grades in courses taken at Northwestern and presented for graduation may be P's and D's.
- Students may double-count up to 3 course units from their concentration toward a second major or an adjunct major (<https://weinberg.northwestern.edu/undergraduate/major-minor/about-majors/adjunct-majors.html>) and up to 2 units toward a minor. Required related courses in Weinberg College are not subject to these limits.
- Students may double-count 1 or 2 course units toward a certificate, if a certificate is over 4 courses. However, certificates that are specifically only 4 courses do not permit any double counting because certificates MUST be four unique courses (<https://catalogs.northwestern.edu/undergraduate/additional-baccalaureate-options/certificates/>) separate from any other major, minor, or certificate.
- Coursework taken at institutions other than Northwestern that is to be counted toward SESP requirements must be approved in advance (<https://www.registrar.northwestern.edu/registration-graduation/transfer-and-test-credit/>) by the student's adviser; if a course taken for credit is outside SESP's curriculum, the relevant academic department at Northwestern must also approve. Students taking community college courses must earn a grade of B or higher for SESP to accept the credit.
- A student typically may not have more than a total of three majors plus minors: three majors, two majors and one minor, or one major and two minors. This is referred to as the "rule of three." Certificate programs do not account against this limit of the "rule of three."
- All degree candidates must file an application for the degree (<https://www.registrar.northwestern.edu/registration-graduation/graduation-preparation/graduation-petition-procedure.html>) with their advisers in advance of their degree completion. The adviser will forward the application, when approved, to the Office of the Registrar.

- Students who wish to transfer into SESP (<https://www.sesp.northwestern.edu/ugrad/information-sessions.html>) from another Northwestern school must
  - Have a minimum cumulative GPA of 2.0 (students in the secondary teaching concentration must maintain minimum GPAs of 2.5 overall and 3.0 in teaching subject-area courses).
  - Attend the appropriate information and orientation sessions and comply with the requirements stated on the interschool transfer application.
- Students transferring from another university must complete 21 units at Northwestern.

In addition to and independent of the requirements set by SESP, all students must satisfy the Undergraduate Registration Requirement (p. 27).

## **Student Resources**

### **Probation**

In addition to the University regulations regarding academic probation, undergraduate students in SESP are ordinarily placed on academic probation when, in any one quarter, they do not meet the SESP requirements. SESP students must work with the Undergraduate Advising Team to meet the conditions set by their probation and address the academic concerns that resulted in probation. Expectations and supports are shared with students in a probation letter and in a meeting with their adviser. For more information on SESP's probation process, please visit the SESP website. (<https://sesp.northwestern.edu/undergraduate-degree-requirements/policies-and-procedures/academic-integrity-probation-and-dismissal.html>)

### **Petitions for Course Substitutions**

Students must petition if they wish to request a change in any of the SESP degree or specific course requirements of SESP. Petitions can be submitted via the SESP Petition Form ([https://docs.google.com/forms/d/e/1FAIpQLScZk4vD5xi87dcWXlpjM\\_tgkb57SSAVNQ5nC2g2ZgykYYeiRw/viewform?formkey=dG9zYndlRDJyM2ZSOFdISWFieUgyZnc6MQ#gid=0](https://docs.google.com/forms/d/e/1FAIpQLScZk4vD5xi87dcWXlpjM_tgkb57SSAVNQ5nC2g2ZgykYYeiRw/viewform?formkey=dG9zYndlRDJyM2ZSOFdISWFieUgyZnc6MQ#gid=0)) or discussed in person with the student's adviser. No petition is considered unless it is approved by the student's adviser.

Additional requirements are stipulated on the SESP website. All students are expected to be familiar with and observe these policies. When requirements or policies change, notification is provided by e-mail.

## **Academic Options**

SESP concentrations are interdisciplinary and flexible, allowing many undergraduates to enroll in University-wide programs or to pursue up to two additional majors, one additional major and one minor, or as many as two minors along with their concentration. Options include the six-quarter Certificate in Civic Engagement Program and the Summer Field Studies Programs administered by SESP; Many students also elect to spend one or more quarters in a University-approved study abroad program.

### **Honors**

Students who maintain records of academic distinction may qualify for the honors program. Any student who has attained a cumulative GPA of 3.5 or above after winter quarter of the junior year is eligible for provisional admission to the program beginning in spring quarter of the junior year. Students considering both study abroad and the honors program must plan their study abroad programs accordingly.

Students who successfully complete SESP 391-0 Advanced Research Design in spring quarter of the junior year and are recommended for the honors program may formally enter the honors program by registering for SESP 398-0 Senior Thesis Seminar in fall quarter of the senior year. In this three-quarter program students work with a faculty adviser on a research project. If progress is satisfactory, students are eligible to register for SESP 398-0 Senior Thesis Seminar in winter and spring quarters of the senior year. Grades are based on performance throughout the program and on readers' evaluations of the project report. All honors students present their projects to SESP faculty, students, and guests at a poster session at the end of the year. Students earn 3 units for successful completion of an honors thesis. They receive departmental honors only on the recommendation of the faculty adviser and the approval of the program director.

## **Education and Social Policy and Music & Education and Social Policy and Journalism Dual Degrees**

Students in any SESP major except undergraduate teaching are able to earn a dual degree in education and social policy and music, developing their passion for music as a tool for creating change in learning environments, human relationships, organizations, and the field of social policy.

Students in any SESP are able to earn a dual degree in education and social policy and journalism to understand and demonstrate the principles and practices of journalism and media in the context of education and social policy.

For details of either five-year program, please see Dual Bachelor's Degrees (p. 38).

## **Student-Organized Seminar**

As its title denotes, SESP 298-0 Student Organized Seminar is a course in which the topic, reading list, assignments, written examinations, prerequisites, and meeting schedule are proposed by SESP students in consultation with a SESP faculty sponsor. Proposals must be submitted by the fifth week of the previous quarter and approved by the director of undergraduate education before the seminar can be offered.

## **Undergraduate Research**

The school's curriculum includes a variety of innovative learning opportunities. Students taking SESP 390-0 Research Apprenticeship complete an apprenticeship as assistants in faculty research projects. In SESP 399-0 Independent Study students carry out their own independent research under faculty supervision. Additional information about undergraduate research opportunities and faculty research projects may be obtained through the academic advisers in the SESP Student Affairs Office and on the SESP website. Student must submit their request to participate in research experiences for credit by the end of the add/drop period via this form. (<https://app.smartsheet.com/b/form/6c239f2486044cbd9f002e8909686ac5/>)

## **Student Resources**

### **Academic Advising**

Each student is assigned to an adviser in the SESP Student Affairs Office. Advisers are responsible for helping students plan academic programs that meet the requirements for completion and graduation. Advisers also help students make use of academic, professional, and personal development resources. Students consult with faculty as well about research and professional interests. Students are encouraged to meet

with their advisers at least once per quarter to develop an individualized plan of study.

## Support for Research, Special Projects, and Experiences

The SESP Undergraduate Opportunities Fund provides support for special academic projects and community endeavors that students or student organizations undertake either on their own or under a faculty member's direction.

Students who pursue research may also seek support from the SESP Undergraduate Research Fund to defray the costs of data collection and analysis, travel, equipment, and other expenses directly related to their projects.

The Munger Family Practicum/Student Teaching Assistance Fund helps students with financial need afford the additional expenses incurred during their practicum or student teaching. Examples of expenses include transportation.

Applications for all SESP financial funds are through the SES One Form (<https://northwestern.academicworks.com/>).

## Elementary Teaching

SESP's interdisciplinary elementary teaching concentration combines subject-area courses in the fields of Physical, Life, and Earth and Space Sciences, Civics and Government, Economics, Geography, Literature and Fine Arts, Historical Studies, and Mathematics/Statistics chosen from SESP and the Weinberg College of Arts and Sciences with teacher education courses like child and adolescent development, and elementary education theory and methods. In addition to the elementary teaching concentration-specific requirements, such as foundational, concentration cluster, and methods courses, elementary teaching candidates must also complete SESP's Core courses, electives, distribution requirements, global engagement overlay, and Heterogeneities, Systems and Inequalities overlay. The program leads to an Illinois Professional Educator license as well as a bachelor of science in education and social policy degree upon completion of licensure and degree requirements. The degree is 42 units.

Similar to the other SESP concentrations, which have a four unit practicum in the third year, elementary teaching students must complete a four unit student teaching internship in the last year while enrolled in TEACH\_ED 387-0 Student Teaching: Elementary.

Northwestern undergraduates in schools other than SESP (i.e. Weinberg College of Arts and Sciences, School of Communication, etc.) have the option to complete requirements for teacher licensure while staying in their home school.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### Total requirements—42 units

- **Foundational disciplines**—10 units
- **SESP core**—8 units
- **Foundations Courses** – 6 units
- **Concentration Cluster Courses** – 10 units
- **Electives**—8 units

**Plus the SESP Overlay Requirements:** Global Engagement, Methods in Context, and Heterogeneity, Systems, and Inequalities

Plus additional overlay subject-area coursework licensure requirements of:<sup>\*</sup>

- History courses taken through the historical studies foundational discipline requirement
- Literature and fine arts courses taken through the literature and arts foundational discipline requirement
- Math and statistics courses taken through SESP 210-0 and 1 empirical and deductive reasoning foundational discipline requirement
- Physical science, life science, and earth and space science courses; 2 of these courses can be taken through the natural science foundational discipline requirements, 1 course is a part of the concentration course requirement.

\* All licensure subject-area coursework requirements are included in the 42 units needed for the degree.

## Overlay Requirements\*

\* Overlay requirements are fulfilled by courses taken for the concentration

Course	Title
<b>Global Engagement</b>	
1 quarter of study abroad or 3 quarters of foreign language or equivalent.	
<b>Heterogeneities, Systems, and Inequalities</b>	
1 course counted towards the concentration: HDC 305-0, LOC 214-0, LOC 214-BR, LOC 351-0 (Identities, Intersection, and Organizations), LRN_SCI 202-0, LRN_SCI 214-0, LRN_SCI 302-0, LRN_SCI 309-0, SESP 251-0 (Finding Your Path: Future Possibilities and Social Change) and (Community Research Methods: Educational Justice), SESP 317-0, SESP 320-0, SESP 323-0, SESP 324-0, SESP 325-0, SESP 351-0 (Computing, Ethics, and Society or Public Learning Through the Arts), SOC_POL 313-0, SOC_POL 315-0, SOC_POL 331-0, SOC_POL 333-0, SOC_POL 351-0 (Intersectional Identities and Public Policy or Urban Education Policy and Practice) TEACH_ED 302-0, TEACH_ED 351-0 (Cognition and Culture in Teaching and Learning), TEACH_ED 341-0	
<b>Methods in Context</b> <sup>1</sup>	
1 course counted towards the concentration: HDC 330-0, HDC 351-0 (Mapping and Spatial Analysis for Social Issues), LOC 308-0, LOC 311-0, LRN_SCI 301-0, LRN_SCI 309-0, LRN_SCI 313-0, LRN_SCI 326, LRN_SCI 351-0 (Sports, Technology and Learning), LRN_SCI 372-0, SESP 204-0, SESP 251-0 (Demystifying Quantitative Data and Community Research Methods: Educational Justice), SESP 310-0, SESP 323-0, SESP 324-0, SESP 351-0 (Public Learning or The Life Story Interview), SOC_POL 330-0, SOC_POL 331-0, SOC_POL 332-0, SOC_POL 333-0, SOC_POL 334-0	

<sup>1</sup> For Elementary Teaching students, any TEACH\_ED Methods course can also fulfill this overlay requirement: TEACH\_ED 311-0, TEACH\_ED 312-0, TEACH\_ED 323-0, and TEACH\_ED 326-0.

## Teacher Education Program

Students who wish to be licensed as teachers must apply to the SESP Teacher Education Program. Elementary Teaching within the program is approved by the Illinois State Board of Education. Completion of the courses alone does not result in licensure, nor is licensure required for completion of the SESP degree.

## Application and Admission

Students completing a teacher licensure pathway as an undergraduate apply to the Teacher Education Program by the fall of their third year.

To be admitted, candidates must have a minimum overall GPA of 2.5 and a minimum GPA of 3.0 in the subject-area courses in the fields of Physical, Life, and Earth and Space Sciences, Civics and Government, Economics, Geography, Literature and Fine Arts, Historical Studies, and Mathematics/Statistics chosen from SESP and the Weinberg College of Arts and Sciences. Additional admissions requirements include a letter of recommendation and a response to a selected essay prompt.

## Clinical Experience

Students in the Teacher Education Program complete two clinical experiences: a school practicum (typically during fall of the last year); and student teaching (typically during winter of the last year).

To be eligible for the clinical experiences, students must have met the GPA requirements for and been admitted to the Teacher Education Program. Students need to be on track to have completed a minimum of 9 courses in the elementary teaching subject area by the end of the practicum term for field-site placement with a department or mentor teacher at a local school. Additionally, students must be available to begin the practicum at the start of the field-site placement's academic school year. Please note that the students' practicum/student teaching field-site placement can be postponed, stopped or withdrawn due to concerns over their health or academic or professional performance. Adjustments to the timing of a clinical experience may be made on an individual case-by-case basis based on determined need; for example, those with an athletics scheduling conflict.

Clinical experiences gained at the field-site are central to the discussion of methods and theories in the practicum seminar TEACH\_ED 377-0 Theory & Practice of Teaching in Multiling. & Multicult. Contexts: Elementary and the Elementary methodology courses TEACH\_ED 311-0 Elementary Science Methods and Content, TEACH\_ED 312-0 , TEACH\_ED 323-0 Elementary Literacy Methods & Content, and TEACH\_ED 326-0 Elementary Math: Methods and Content.

To be eligible for student teaching, students must have successfully completed the applicable Elementary methodology courses TEACH\_ED 311-0, TEACH\_ED 315-0, TEACH\_ED 323-0 and TEACH\_ED 326-0 as well as TEACH\_ED 377-0, earned a passing score on the applicable ILTS Content-Area Test, fulfilled minimum GPA requirements for student teaching, completed 9 elementary teaching subject-area courses and have been recommended for continuation to student teaching. Most school districts also require a criminal background check.

Student teaching involves full-time placement in a local school for the entire quarter. Teacher candidates attend an evening seminar (TEACH\_ED 387-0 Student Teaching: Elementary). The internship and seminar together earn 4 units. No other courses are taken concurrently. Teacher candidates are evaluated by their school mentor, a Northwestern supervisor, and the seminar instructor.

## Other Licensure Requirements

In addition to successful completion of the clinical experiences, all teacher candidates must successfully complete the Teacher Performance Assessment, or equivalent as required by the Illinois State Board of Education, at the end of the practicum.

## Recommendation for Licensure

Students are recommended for licensure when they successfully complete degree requirements, earn a rating of recommendation for licensure for practicum/student teaching and pass all outside tests as noted above. Although legal requirements for licensure vary from state to

state, the SESP Teacher Education Program is flexible enough to permit students who plan carefully to complete provisional requirements for most states. As it is easier to obtain a teaching license in another state through reciprocity than through independent certification, all students who complete the program and are eligible are encouraged to apply for an Illinois license before leaving the state.

Students should apply for the license immediately upon graduation. Teacher Education Program graduates who are recommended, but do not apply for certification upon graduation may not be eligible for certification at a later date due to changes in state requirements.

The Illinois School Code has provided that school districts may not knowingly employ individuals who have been convicted of certain offenses (principally those related to sexual misconduct or drugs). Illinois school districts require applicants to submit to a criminal background check.

## Program of Study

- Elementary Teaching Major (p. 115)

**TEACH\_ED 301-0 Schooling in America (1 Unit)** This course will explore the development of schools in the United States by understanding the ideologies and decisions (pedagogical and political) that have shaped schools over 200 years.

**TEACH\_ED 302-0 Social, Cultural, and Linguistic Contexts of Education (1 Unit)** This course is designed to explore how the ways that we live culturally provide strengths for teaching, learning and design. The course draws from the interdisciplinary study of socio-cultural, linguistic, and contextual influences of education, as well as perspectives from learning, teaching, research and policy. Candidates will examine how issues of power and privilege as they pertain to race, ethnicity, language, class, gender, sexuality and identity politics shape and are shaped within our education system. Candidates will be asked to consider their own schooling experiences, and deeply evaluate their beliefs, thoughts and assumptions about the influence of various legal, historical, socio-cultural and linguistic factors on their ideas about teaching, learning, and schooling. Special attention will be given to the major trends that influence contemporary landscapes of PK-12 education and the potential systemic benefits and harms associated with them. Candidates will produce an autoethnography that considers the impact of personal formal and informal learning experiences rooted in racial, cultural and linguistic identity on their life view, as well as how they move through the world as advocates for justice.

**TEACH\_ED 309-0 Designing and Supporting Discourse-Rich Environments for Learning (1 Unit)** Across the K-12 curriculum, approaches to teaching and learning that focus on student sensemaking and meaningful learning rely on creating a classroom where much of this sensemaking work occurs through talk. Supporting productive classroom discourse is a key element in engaging students in meaningful knowledge-building work. Teachers need tools and strategies to create and support an environment in which students feel welcome and responsible for contributing by sharing their ideas, building on one another's thinking, and working together to further their learning as a community. This course address how to support discourse in the classroom, including designing discussion-based tasks, supporting students in academic discourse, creating a classroom climate supportive of discussion, questioning strategies and talk moves that facilitate discussion, and assessment in discussion-based tasks. We will examine current approaches to supporting effective classroom discussions drawn from elementary, middle school, and high school classrooms, and across

multiple disciplines including math, literacy, history, science, and others. Work in the course will involve discussing articles sharing discourse strategies and analyzing video of classroom interactions to see these approaches in action. Students will have the opportunity to work with the tools and strategies of the course in analyzing a classroom discussion they choose to observe, designing discussion-based lessons for their own teaching context, and to try out these tools in facilitating discussions with their peers.

**TEACH\_ED 310-0 Foundations of Learning in a New Language (1 Unit)**  
Historical, political, sociocultural, and educational practices that impact linguistically and culturally diverse learners in American schools.

**TEACH\_ED 311-0 Elementary Science Methods and Content (1 Unit)**  
This is Part I of a two-part combined Elementary Science and Social Studies Methods course sequence. This course prepares preservice teachers to teach science and social studies in the elementary grades. Inquiry is a grounding principle that will be explored in the context of both science and social studies planning. Candidates will examine interdisciplinary planning and shared pedagogy, and methodologies for both science and social studies. Some class sessions, readings, or experiences will focus on either science or social studies in contrast with some of the cross-curricular approaches. Science topics include the fundamental principles and interrelationships among various areas of science (life, physical, environmental, earth and space), science and engineering practices and investigation to solve problems, and how to engage students in acquiring new knowledge. The broad range of social science content will be addressed, including history, geography, culture, economics and citizenship, with connections to Illinois, the United States and the world. Candidates will work with and examine Next Generation Science Standards, Common Core Standards, and Illinois State Standards.

**TEACH\_ED 314-0 Math for Elementary Teachers (1 Unit)** Math for Elementary Teachers.

**TEACH\_ED 315-0 Elementary Social Studies Methods and Content (1 Unit)**  
This is Part II of a two-part combined Elementary Science and Social Studies Methods course sequence. Candidates will continue their work and study from Part I. This course prepares preservice teachers to teach science and social studies in the elementary grades. Inquiry is a grounding principle that will be explored in the context of both science and social studies planning. Candidates will examine interdisciplinary planning and shared pedagogy, and methodologies for both science and social studies. Some class sessions, readings, or experiences will focus on either science or social studies in contrast with some of the cross-curricular approaches. Science topics include the fundamental principles and interrelationships among various areas of science (life, physical, environmental, earth and space), science and engineering practices and investigation to solve problems, and how to engage students in acquiring new knowledge. The broad range of social science content will be addressed, including history, geography, culture, economics and citizenship, with connections to Illinois, the United States and the world. Candidates will work with and examine Next Generation Science Standards, Common Core Standards, and Illinois State Standards. Prereq: completion of TEACH\_ED 311.

**TEACH\_ED 318-0 Teaching Math: Geometry (1 Unit)** The course is intended to deepen conceptual understanding of middle school and high school geometry topics, especially as related to attributes and relationships of geometric objects.

**TEACH\_ED 319-0 Teaching Math: Statistics and Probability (1 Unit)**  
This course aims to effectively prepare teachers to help middle school and high school students "learn with understanding" the fundamentally important statistics and probability concepts and skills that are needed

for today's world and that are articulated in the Common Core State Standards.

**TEACH\_ED 320-0 Designing for Linguistically and Culturally Sustaining Instruction (1 Unit)** The Designing for Culturally and Linguistically Sustaining Teaching course engages pre-service candidates in developing equitable and sustaining planning and instructional techniques reflective of the lives, languages, literacies, and cultural ways of being that represent the children they will teach. Through exploring diverse heterogeneous instructional practices, this course delves into understanding strategies and ways of thinking about content that transform the daily instructional experiences we can offer our students, making connections a reality.

**TEACH\_ED 322-0 Linguistics Informed Approaches to Literacy (1 Unit)**  
The Linguistics Informed Approaches to Literacy course supports students in analyzing the aims of linguistic science as well as how linguistic concepts apply to teaching in a variety of settings (including with multilingual students, monolingual students, and bilingual classrooms). Students will think about the complexities of language and how they connect with identity, culture, power, and schooling. Students explore topics like syntax, phonology, morphology, semantics, and cognates as they develop their own metalinguistic awareness in support of facilitating effective teaching and learning. A focal area will be supporting the development of students' literacies. Content-area reading topics include but are not limited to pre-reading, post-reading, vocabulary, fluency, and comprehension.

**TEACH\_ED 323-0 Elementary Literacy Methods & Content (1 Unit)**  
In the course participants will gain an understanding of the cognitive foundations of reading comprehension and their influence on methods of instruction and assessment, as well as the interrelationships between reading processes and language learning.

**TEACH\_ED 324-0 Critical Issues in Literacy (1 Unit)** Continues on the work in MS\_ED 422-0 and TEACH\_ED 322-0, delving deeply into critical literacy issues.

**TEACH\_ED 326-0 Elementary Math: Methods and Content (1 Unit)**  
The course provides an overview of mathematical topics taught in elementary and middle school. Course participants learn in small groups and reflect on their own and children's learning. Pedagogical contexts for the mathematical concepts are provided.

**TEACH\_ED 327-0 Educating Exceptional Children (1 Unit)** Students with disabilities, including learning disabilities resulting from human development and/or accidents; understanding and application of approved emergency, educational, and rehabilitative activities; interrelationships with medical, health, and educational personnel.

**TEACH\_ED 328-0 Dynamics of Middle School Curriculum (1 Unit)**  
Identifying and understanding the effects of middle school dynamics (principles, structures, and practices) on classroom learning and instruction. Focuses on the development and social problems of fifth through eighth graders.

**TEACH\_ED 329-0 Cognition and Culture in Teaching and Learning (1 Unit)**  
This course is an exploration of the theoretical foundations of research on culture and cognition and how to apply these ideas to views of learning and teaching in a variety of settings. Students enrolled in the course can still receive credit if LOC/LRN\_SCI 214 has already been taken. This course builds on topics from LRN\_SCI 301 with an emphasis on classroom environment.

**TEACH\_ED 332-0 Assessment of Linguistically Diverse Students (1 Unit)**  
The Assessment of Linguistically Diverse Students course engages pre-service teacher candidates in learning about a variety of assessment

approaches, (including but not limited to standardized, formative, diagnostic, performance-based, etc.) with special attention to how assessment of English-Language Learners has been conceptualized within American historical and contemporary sociopolitical and sociocultural contexts. Issues of legality, bias, non-discriminatory policies, and ethical considerations that must accompany decisions about standards and practices used in the assessment of culturally and linguistically diverse students will be explored. Candidates will be asked to examine policies facing educators of linguistically diverse learners over the last century, and articulate multiple perspectives associated with the issue drawing from course readings and outside research.

**TEACH\_ED 333-0 Science Content for Teachers (1 Unit)** This course utilizes a discussion format with a heavy emphasis on critical thinking and skills based activities. The inquiry/discussion approach will help us delve into the concepts of ecology & earth systems found on the Illinois Licensure Test.

**TEACH\_ED 334-0 Social Science Content for Teachers (1 Unit)** Students will explore ways to select social studies content that is both meaningful and empowering for their students by engaging with texts that critically examine various social studies topics.

**TEACH\_ED 336-0 Instructional Design & Assessment (1 Unit)** Students will gain an overview of various approaches to curriculum design and instructional models, and will investigate several kinds of assessments, including formative and summative, and how those assessments are linked to instructional design, teaching and learning. Opportunities will be given to practice grading, providing good feedback, and managing a class assessment system.

**TEACH\_ED 338-0 Computational Tools for Justice and Inquiry-Based Learning (1 Unit)** Theory and practice of designing school environments that integrate new technologies and media. Taught with LRN\_SCI 338-0; may not receive credit for both courses.

**TEACH\_ED 351-0 Special Topics in Teacher Education (1 Unit)** Advanced work on special topics.

**TEACH\_ED 355-0 Methods & Techniques: World Languages (1 Unit)** Analysis of research, teaching methodologies, and literature related to the content area. Focuses on learning experiences, methods, and educational techniques appropriate for elementary, middle school, and high school students. Concurrent registration in TEACH\_ED 378-0 or TEACH\_ED 379-0 required.

**TEACH\_ED 356-0 Methods & Techniques: English (1 Unit)** Analysis of research, teaching methodologies, and literature related to the content area. Learning experiences, methods, and educational techniques appropriate for high school students.

**TEACH\_ED 357-0 Methods and Techniques: Secondary Mathematics (1 Unit)** See description for MS\_ED 456-0.

**TEACH\_ED 358-0 Methods and Techniques: Science (1 Unit)** See description for MS\_ED 456-0.

**TEACH\_ED 359-0 Methods & Techniques: Social Science (1 Unit)** See description for MS\_ED 456-0.

**TEACH\_ED 366-0 Middle Grades Methods & Techniques of Teaching: English (1 Unit)**

**TEACH\_ED 367-0 Middle Grades Methods & Techniques of Teaching: Mathematics (1 Unit)**

**TEACH\_ED 368-0 Middle Grades Methods & Techniques of Teaching: Science (1 Unit)**

**TEACH\_ED 369-0 Middle Grades Methods & Techniques of Teaching: Social Sciences (1 Unit)**

**TEACH\_ED 373-0 Topics in High School Math (1 Unit)** Content varies.

**TEACH\_ED 375-0 Theory & Practice of Tchg in Multiling. & Multicult. Contexts: Secondary Math (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

**TEACH\_ED 376-0 Theory & Practice of Tchg in Multiling. & Multicult. Contexts: Secondary Science (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

**TEACH\_ED 377-0 Theory & Practice of Teaching in Multiling. & Multicult. Contexts: Elementary (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

**TEACH\_ED 377-0 Theory & Practice of Teaching in Multiling. & Multicult. Contexts: Elementary (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction

(through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

#### **TEACH\_ED 378-0 Theory & Practice of Tchg in Multiling. & Multicult.**

**Contexts: Sec. Humanities (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

#### **TEACH\_ED 381-0 BSED/BSJ Experiential Learning Community Workshop Series (0 Unit)**

In their second year, students choose 1 experiential education requirement – either the SESP Practicum, Student Teaching, or Medill Journalism Residency for 4 units of credit. The students participate in the Community Workshop Series during the year they complete their experiential education requirement.

**TEACH\_ED 385-0 Student Teaching in Multilingual and Multicultural Contexts: Secondary Math (4 Units)** The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisite: TEACH\_ED 375-0.

**TEACH\_ED 386-0 Student Teaching in Multilingual and Multicultural Contexts: Secondary Science (4 Units)** The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators,

including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisite: TEACH\_ED 376-0.

**TEACH\_ED 387-0 Student Teaching: Elementary (4 Units)** The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisites: TEACH\_ED 377-0.

**TEACH\_ED 388-0 Student Teaching in Multilingual & Multicultural Contexts: Secondary Humanities (4 Units)** The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisites: TEACH\_ED 378-0.

## **Elementary Teaching Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Foundational Disciplines (10 units)

- 2 natural sciences courses<sup>1</sup>
- 2 empirical and deductive reasoning courses<sup>2</sup>
- 2 historical studies courses<sup>3</sup>
- 2 ethical and evaluative thinking courses
- 2 literature and arts courses<sup>4</sup>

Selected courses from Weinberg College and professional schools across the University fulfill distribution requirements. A meeting with the student's academic advisor is required prior to registering for distribution requirement courses.

### Overlay Notes:

- <sup>1</sup> Please speak to academic advisor before choosing natural sciences courses to make sure elementary teaching licensure requirement is met. Please visit the Elementary Teaching Extension Courses guide ([https://docs.google.com/spreadsheets/d/1L77FcQVf0fG-K\\_8eXMN2i89oww4CGLTLW9pbn\\_8Dv8A/edit/#gid=0](https://docs.google.com/spreadsheets/d/1L77FcQVf0fG-K_8eXMN2i89oww4CGLTLW9pbn_8Dv8A/edit/#gid=0)) for more information. Note that the two of these science classes that count as Natural Science foundational disciplines requirements must be chosen from the science cluster list below. You must take 1 course from each of the following groups: Physical Science, Life Science and Earth & Planetary Science.
- <sup>2</sup> Please speak to your academic advisor before choosing empirical and deductive reasoning courses to make sure elementary teaching licensure requirement is met. Please visit the Elementary Teaching Extension Courses guide ([https://docs.google.com/spreadsheets/d/1L77FcQVf0fG-K\\_8eXMN2i89oww4CGLTLW9pbn\\_8Dv8A/edit/#gid=0](https://docs.google.com/spreadsheets/d/1L77FcQVf0fG-K_8eXMN2i89oww4CGLTLW9pbn_8Dv8A/edit/#gid=0)) for more information. Note that one of these classes that count as Empirical and Deductive Reasoning foundational discipline requirements must be a math or statistics course and must be chosen from the Math/Statistics cluster list below.
- <sup>3</sup> One historical studies foundational discipline must be a US history class.
- <sup>4</sup> One literature and arts foundational discipline must be a literature course.

## SESP Core (8 units)

Course	Title
SESP 200-0	Understanding Knowledge
SESP 201-0	Human Development: Childhood and Adolescence <sup>3</sup>
SESP 210-0	Introduction to Statistics and Research Methodology
SESP 272-0	Field Research Methods
TEACH_ED 387-0	Student Teaching: Elementary

<sup>3</sup> SESP 201 has a few alternatives. SESP 351-0 Special Topics (Child and Adolescent Development) and PSYCH 244-0 Developmental Psychology are both substitutions, however please note that PSYCH 110-0 Introduction to Psychology is a prerequisite for PSYCH 244-0.

## Foundations Courses (6 units)

Course	Title
TEACH_ED 301-0	Schooling in America
TEACH_ED 302-0	Social, Cultural, and Linguistic Contexts of Education

TEACH_ED 310-0	Foundations of Learning in a New Language
TEACH_ED 327-0	Educating Exceptional Children
TEACH_ED 322-0	Linguistics Informed Approaches to Literacy
TEACH_ED 377-0	Theory & Practice of Teaching in Multiling. & Multicult. Contexts: Elementary

## Concentration Cluster Courses

Please visit the Elementary Teaching Extension Courses guide ([https://docs.google.com/spreadsheets/d/1L77FcQVf0fG-K\\_8eXMN2i89oww4CGLTLW9pbn\\_8Dv8A/edit/#gid=0](https://docs.google.com/spreadsheets/d/1L77FcQVf0fG-K_8eXMN2i89oww4CGLTLW9pbn_8Dv8A/edit/#gid=0)) for more information. Students will be notified by their advisor if there are any changes to this list.

All Elementary Teaching students take the following as a part of their cluster requirements:

### Sciences (1 unit)\*

One from the Physical Science cluster, one from the Life Science cluster, and one from the Earth and Space Science cluster.

Some courses will fulfill more than one cluster, but credit will only be applied once to one cluster. Students still need to complete 3 units, one in each cluster.

**Please note that two of these science classes will count as Natural Science foundational disciplines requirements when chosen from this list. You must take 1 course from each of the following groups: Physical Science, Life Science and Earth & Planetary Science.**

\*2 units met by foundational disciplines by the Foundational Disciplines overlay.

Course	Title
<b>Physical Science</b>	
CHEM 131-0	Fundamentals of Chemistry I
CHEM 132-0	Fundamentals of Chemistry II
CHEM 201-0	Chemistry of Nature and Culture
EARTH 101-0	Earth Science for the 21st Century
EARTH 106-0	The Ocean, the Atmosphere & Our Climate
EARTH 180-0	Fantasy Worlds – How to Build Your Own Planet
EARTH 201-0	Earth Systems Revealed
EARTH 203-0	Earth System History
PHYSICS 103-0	Ideas of Physics
Any level Physics course; please speak with your advisor.	
<b>Life Science</b>	
BIOL_SCI 103-0	Diversity of Life
BIOL_SCI 109-0	The Nature of Plants
BIOL_SCI 150-0	Human Genetics
EARTH 101-0	Earth Science for the 21st Century
EARTH 106-0	The Ocean, the Atmosphere & Our Climate
EARTH 203-0	Earth System History
ENVR_SCI 201-0	Earth: A Habitable Planet
ENVR_SCI 202-0	The Health of the Biosphere
TEACH_ED 333-0	Science Content for Teachers
Any level Biological Sciences course; please speak with your advisor.	
<b>Earth and Planetary Science</b>	
ASTRON 101-0	Modern Cosmology
ASTRON 102-0	Milky Way Galaxy
ASTRON 103-0	Solar System
ASTRON 120-0	Highlights of Astronomy

EARTH 101-0	Earth Science for the 21st Century	SESP 360-0	Magic Monsters & the Holocaust
EARTH 106-0	The Ocean, the Atmosphere & Our Climate	LRN_SCI 224-0	Holocaust Education Design
EARTH 180-0	Fantasy Worlds – How to Build Your Own Planet	TEACH_ED 329-0	Cognition and Culture in Teaching and Learning
EARTH 201-0	Earth Systems Revealed	LRN_SCI 301-0	Design of Learning Environments
EARTH 203-0	Earth System History	HDC 305-0	Identity and Motivation
TEACH_ED 333-0	Science Content for Teachers	SOC_POL 351-0	Special Topics in Social Policy (Impacts of Education Policy on Teachers)

## Math and Statistics Overlay

Please note that this unit is fulfilled by one of the Empirical and Deductive Reasoning (FD-EDR) foundational discipline requirements when the class is chosen from the following list:

Course	Title
MATH 100-0	Quantitative Reasoning
MATH 202-0	Finite Mathematics
Any level Math course; please speak with your advisor.	
STAT 210-0	Introduction to Probability and Statistics
TEACH_ED 314-0	Math for Elementary Teachers
TEACH_ED 318-0	Teaching Math: Geometry
TEACH_ED 319-0	Teaching Math: Statistics and Probability
TEACH_ED 373-0	Topics in High School Math

## Social Sciences (2 units)

Course	Title
TEACH_ED 334-0	Social Science Content for Teachers

The other unit can be fulfilled with any of the following:

Course	Title
POLI_SCI 220-CN	American Government and Politics
POLI_SCI 230-CN	Law in the Political Arena
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics

## Methods (4 units)

Course	Title
TEACH_ED 311-0	Elementary Science Methods and Content
TEACH_ED 312-0	
TEACH_ED 323-0	Elementary Literacy Methods & Content
TEACH_ED 326-0	Elementary Math: Methods and Content

## Equity and Education (3 Units)

Course	Title
TEACH_ED 309-0	Designing and Supporting Discourse-Rich Environments for Learning
LOC/LRN_SCI 214-0 or LOC 214-BR	Culture and Cognition Culture and Cognition: SESP Leadership Institute
SESP 260-0	Community Based Research Methodologies: Educational Justice
TEACH_ED 324-0	Critical Issues in Literacy
TEACH_ED 328-0	Dynamics of Middle School Curriculum
SESP 320-0	Race and Education
SESP 195-1	Civic Engagement 1- Participatory Policymaking
SESP 195-2	Civic Engagement 2: Participatory Budgeting
SESP 195-3	Civic Engagement 3: Organizing, Gathering & Policy implementation
SESP 325-0	Race, Adolescence, and School Discipline
SESP 323-0	Trauma and Atrocity: Holocaust Memory, Memorial and Museums

## Electives (8 units)

Additional units of elective coursework must be taken to complete the 42-unit degree requirement. Students are encouraged to discuss their elective plans with the teacher certification manager.

## Middle Grade Endorsement (optional)

- 7 courses in competency areas:

- Science
- English
- Spanish
- Math
- Social Science

- 1 Middle Grades Methods and Techniques course:

Course	Title
TEACH_ED 366-0	Middle Grades Methods & Techniques of Teaching: English
TEACH_ED 367-0	Middle Grades Methods & Techniques of Teaching: Mathematics
TEACH_ED 368-0	Middle Grades Methods & Techniques of Teaching: Science
TEACH_ED 369-0	Middle Grades Methods & Techniques of Teaching: Social Sciences

## English as a Second Language (ESL) and Bilingual Education Endorsements (optional)

- Most requirements for these endorsements are met through other course work in this degree. To complete the endorsements students are encouraged to take the following courses:

Course	Title
TEACH_ED 320-0	Designing for Linguistically and Culturally Sustaining Instruction
TEACH_ED 332-0 or MS_ED 432-1 & MS_ED 432-2	Assessment of Linguistically Diverse Students I and Assessment of Linguistically Diverse Students II

## Experiential Learning

[sesp.northwestern.edu/ugrad/practicum](http://sesp.northwestern.edu/ugrad/practicum)

## The Practicum

At the School of Education and Social Policy, we go beyond classroom learning. Experiential learning is a critical aspect of a SESP education, and students frequently describe the junior year practicum as the highlight of their four years of college. Juniors participate in hands-on internships, research or community service. To complete the practicum requirement, students spend one term at an off-campus internship that's

relevant to their interests and are enrolled in SESP 392-0 Experiential Learning: Practicum.

An academic component complements the hands-on practicum experience. Students attend a concurrent seminar where they systematically examine their on-site experiences, reflect on their own performance and career interests. Students earn four academic credits, which are core requirements for graduation. Students receiving financial aid may apply for it to cover the cost of tuition.

## **Practicum & Global Engagement**

The Practicum can also be completed abroad via SESP 392-SA Experiential Learning: Practicum Study Abroad. This course is affiliated through Northwestern University's Global Learning Office and is currently offered in Milan, Italy (<https://gloapp.northwestern.edu/?FuseAction=Programs.ViewProgramAngular&id=10236>), Dublin, Ireland (<https://gloapp.northwestern.edu/?FuseAction=Programs.ViewProgramAngular&id=10255>), and Sydney, Australia (<https://gloapp.northwestern.edu/?FuseAction=Programs.ViewProgramAngular&id=10266>).

## **Human Development in Context**

[sesp.northwestern.edu/ugrad/human-development-in-context](http://sesp.northwestern.edu/ugrad/human-development-in-context)

The Human Development in Context (HDC) program examines how people throughout the lifespan develop in, are influenced by, and shape the social settings they encounter (e.g., families, communities, educational institutions, and the workplace). HDC courses focus on theories of individual and family development; the local and global dynamics of learning; and cognition, social relations, and policy. This interdisciplinary program draws from current and actionable theory, research, and practice from areas as diverse as psychology, sociology, intercultural studies, gender studies, economics, and policy science.

## **Program of Study**

- Human Development in Context Major (p. 120)

**HDC 305-0 Identity and Motivation (1 Unit)** Examines the connection between conceptions of the self and goal-oriented motivation, with particular attention to the influence of social, structural, and cultural forces.

**HDC 307-0 Emotional Mysteries (1 Unit)** Classrooms, work settings, and family relations are hotbeds of emotion. But what is an emotion? What happens in our bodies when an emotion is triggered? How can emotions help us live productive, healthy, and connected lives? And can we ever truly understand what somebody else is feeling? These are some of the mysteries that we will seek to unravel in this course. We will read literature from Darwin to the latest scientific studies, combine lectures and small-group discussions, conduct research experiments, and engage in peer review and online collaboration.

**HDC 309-0 Team Dynamics (1 Unit)** In this course, we will explore team dynamics, those forces that influence a team's behavior and performance, and what can enhance or hinder potential for impact. We will analyze the contributors to team functioning and their interrelationships at multiple levels: intrapersonal, interpersonal, group and organizational. Key topics include team development, team make-up and roles, leadership and followership, decision-making, navigating conflict, collaboration and competition, effective communication, content vs. process, diversity and in-group/out-group tensions. Throughout the class, students will be analyzing and applying concepts through

case studies and simulations. Assignments to demonstrate mastery include regular written individual papers and a team project. This course is suitable for undergraduate students in LOC, Human Development in Context, and related majors throughout Northwestern that are interested in leadership, teams/groups or organizational change. Taught with LOC 309-0; may not receive credit for both courses.

**HDC 310-0 The Art and Science of Aging (1 Unit)** For over 2000 years, poets and philosophers have commented on the universal human experience of "getting older." In the past few hundred years, novelists and scientists have joined the effort, along with filmmakers, musicians, counselors, bloggers, motivational speakers, and a host of others. What does it feel like to move through the adult years and toward "old age"? How do people's personalities, social relationships, and overall world view change as they grow older? What does psychological and social science have to say about general trends, as well as individual differences, in aging? This discussion-based and writing-intensive seminar is sequentially organized in terms of five cardinal themes: (1) the social/emotional world, (2) generations, (3) memory and the self, (4) loss, and (5) wisdom of the ages. Within these five themes, the seminar will consider a range of psychological and social issues as they apply to adult development and aging, sampling some of the most provocative sources from fiction, drama, poetry, music, and cinema - and from the scientific literature.

**HDC 330-0 Adolescent Stress: Sources and Solutions (1 Unit)** Why are adolescence and early adulthood stressful periods of life? Are they more stressful now than in the past? How do we best define and measure adolescent and young adult stress? This course is an advanced, interactive, undergraduate class in which the instructor and students explore the set of above questions together, through readings, discussions, and through qualitative and quantitative coding and analysis of datasets on adolescent stress. Prerequisites: (SESP 201-0) and (SESP 210-0 or any 200-level Statistics Equivalent).

**HDC 340-0 Building Loving and Lasting Relationships: Marriage 101 (1 Unit)** The intricacies and problems of close, committed, interpersonal relationships, especially marriage. Juniors and Seniors only.

**HDC 347-0 Mapping and Spatial Analysis for Social Issues (1 Unit)** The focus of the course is on using the power of geospatial analysis to identify, understand, and make recommendations about addressing social, racial, and other inequities, including access to healthy food, environmental pollution, policing, etc. Students will learn basic use of the ArcGIS online program to support geospatial analysis.

**HDC 351-0 Special Topics in Human Development in Context (1 Unit)** Advanced work on special topics.

**HDC 399-0 Independent Study (1 Unit)** SEE DEPT FOR SECTION AND PERMISSION NUMBERS.

**SESP 114-0 Summer Internship (0 Unit)**

**SESP 115-0 Internship (0 Unit)**

**SESP 116-0 Finding Your Path (0 Unit)** A continuation of Finding Your Path: Pathways and Future Possibilities (SESP 251), a course that supports second-year students most impacted by the historical and contemporary realities of classism and racism as they map their path forward to career fulfillment. This class is a 0 credit class in which Pathways students conduct a search for a summer internship and then complete said internship.

**SESP 195-1 Civic Engagement 1- Participatory Policymaking (1 Unit)** Policy implementation involves more than just identifying and researching options, policymakers must consider design program design, costs & sustainability; political feasibility; and building political support.

In this class, you will learn how to design policy for implementation through Northwestern's Participatory Budgeting process.

**SESP 195-2 Civic Engagement 2: Participatory Budgeting (1 Unit)**

Democracy gives limited opportunities for citizens to influence decision-making. In this class you will learn to implement open democracy innovations, that are more inclusive, more representative, and lead to better policy outcomes, by implementing a campus-wide participatory budgeting process, where community decides how to spend \$1000 to address climate change.

**SESP 195-3 Civic Engagement 3: Organizing, Gathering & Policy implementation (1 Unit)** How do we motivate people to take action? In this class, you will learn the techniques of relational organizing (canvassing, one-on-ones, public narrative), designing civic gatherings (Civic Saturdays) that move people to action to build social movements. You will also oversee policy implementation of community development projects selected in the participatory budgeting process.

**SESP 200-0 Understanding Knowledge (1 Unit)** What does it mean to know something? What are the different types of knowledge and what distinguishes them from one another? What counts as fact vs. opinion vs. belief and so on; who gets to decide and under what conditions? How is knowledge produced and how does it gain traction? How does the source and type of knowledge interact with socio-political-cultural constructs and systems of power and, in turn, how can "knowledge" be used to produce and/or perpetuate power and privilege or to empower those who are marginalized? Finally, how does what we do in SESP and at Northwestern as both consumers and producers of knowledge fit within the landscape of these questions? In this course students will explore these and other questions to gain insight into the social production, distribution, consumption, interpretation, and operationalization of "knowledge." Using primarily seminar-style discussion, the first portion of the course focuses on building and analyzing theoretical frameworks and applied texts in order to generate a working understanding of "knowledge" in its myriad forms. Among our goals for the first portion of the course is to tie theoretical, academic, and "folk" knowledges to everyday experiences and the world around us writ large. The second portion of the class will involve a series of applied cases studies, including welcoming members of the SESP faculty community to present on their research, which we will work to bring into conversation with our generated frameworks regarding the sources, types, and implications of knowledge.

**SESP 201-0 Human Development: Childhood and Adolescence (1 Unit)** Personal, social, and cognitive development from birth through adolescence. Interplay of biological and experiential factors on linguistic and conceptual development, ego, and personality.

**SESP 203-0 Human Development: Adulthood and Aging (1 Unit)**

Psychological, sociological, and biological factors influencing socialization and development from young and middle adulthood through old age. Influences of family, school, and work on the individual.

**SESP 204-0 Designing for Social Change (1 Unit)** A key goal of this course is to acquire an intellectual and applied understanding of the principles of program design and development, which include a sustained consideration of issues affecting the quality of program implementation. This course is best suited for FIRST AND SECOND YEAR students.

**SESP 210-0 Introduction to Statistics and Research Methodology (1 Unit)**

Definitions and classifications of terms used in quantitative methods; measures of typical and maximum performance, reliability, and validity checks; reporting and displaying data; interpreting results.

**SESP 218-0 Leaders Lab (1 Unit)** Leaders Lab is an interactive, engaging and dynamic fall quarter course that was created and designed for

incoming first and second-year students in SESP to reflect, experience and engage in dialogue about the "big" questions in life such as: who am I? What is my purpose in life? How can I be me? What are my responsibilities to the communities I'm a part of? Why do I serve? What is leadership? How can I lead? This course is associated with the SESP Leadership Institute. Only students enrolled in the leadership institute can register for this course.

**SESP 251-0 Special Topics (1 Unit)** N/A.

**SESP 260-0 Community Based Research Methodologies: Educational Justice (1 Unit)** This course examines the histories, ideas, practices, relations and possible futures that shape struggles for educational justice and human thriving. The course is unique in that it brings together an intergenerational group of thinkers and learners (high school students, undergraduate students, youth workers, graduate students, professors, high school teachers and community members) to engage in collaborative study, reflection and design.

**SESP 272-0 Field Research Methods (1 Unit)** Guided practice in systematic and participant observation. Observer bias, field notes, unobtrusive measures.

**SESP 291-1 Peer-Led Learning: Theory and Practice (0.25 Unit)** SESP 291 is the training program for students working as first-time mentors in the Peer Leaders program. It is taken over two academic quarters, with each quarter offering .25 credit (a total of .5 credit). You will receive a "K" grade for fall quarter, which means you are continuing in the course. After winter quarter, you will receive a letter grade which will be retroactively applied to fall quarter.

**SESP 291-2 Peer-Led Learning: Theory and Practice (0.25 Unit)**

**SESP 295-1 Leadership Studio I (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to students who have completed the first year sequence of the certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SESP 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SESP 195-1, 195-2, 195-3 to enroll.

**SESP 295-2 Leadership Studio II (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to student who have completed the first year sequence of the Civic Engagement Certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SESP 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SESP 195-1, 195-2, 195-3 to enroll.

**SESP 298-0 Student Organized Seminar (1 Unit)** Courses proposed by students and supervised by faculty sponsors on special topics approved by the SESP undergraduate education director. May be taken only once per quarter; pass/no credit only. Consultation with the SESP student affairs assistant dean advised.

**SESP 299-1 Civic Engagement Capstone Research (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 299-2 Certificate in Civic Engagement- Capstone Project (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 310-0 Causal Methods for Evaluating Policy (1 Unit)** This course will provide students with a framework for understanding causal inference and a toolkit for making causal claims using quantitative data. Prerequisites: Students need to have taken SESP 210-0 or any 200-level STATS course.

**SESP 320-0 Race and Education (1 Unit)** Conceptual underpinnings of the construct of race and how conceptions of race have influenced the course of education in the United States.

**SESP 322-0 Crafting Child Policy (1 Unit)** This course is open to undergraduate students interested in#the intersection of child development, social policy, and#applied #research. The course will guide students in how to apply psychological theory and rigorous research methods to the study of child and family policies in real-world settings. Working in groups, students will have the opportunity to answer pressing,#current#questions posed by the#Illinois #Governor's Office of Early Childhood Education and Chicago's Office of the Mayor. Group projects have the potential to help inform the structure and development of the state's#innovative#policies for young children (birth to 8) and #their #families.

**SESP 323-0 Trauma and Atrocity: Holocaust Memory, Memorial and Museums (1 Unit)** What is Holocaust memory? How has Holocaust memory changed over time, and how does the Holocaust continue to affect our understanding of trauma, atrocity, and human rights today? This seminar addresses individual memory, including survivor and witness testimony, memory and trauma, and the impact of the Holocaust on survivors' families and communities.

**SESP 324-0 Pedagogies for History and Injustice: Holocaust Education Design (1 Unit)** N/A.

**SESP 325-0 Race, Adolescence, and School Discipline (1 Unit)** In recent years, racial disparities in school discipline have attracted the attention of educators, policymakers, parents, and the general public. Why is it so hard for legal, political, and educational institutions to improve school discipline? How do intersections of race, gender, and social class matter for students' experiences of school discipline? Are there schools that are getting discipline right? What does that look like, and to what extent can other schools learn from their successes? In this course, we will learn about evidence-based policy improvements and imagine how to create schools where race does not predict discipline.

**SESP 351-0 Special Topics (1 Unit)** Advanced work on special topics.

**SESP 351-SA Special Topics (1 Unit)** Advanced work on special topics. This course is limited to students approved to study abroad through the Global Learning Office (GLO).

**SESP 360-0 Magic Monsters & the Holocaust (1 Unit)** In this course, we'll explore public learning about the Holocaust through popular film and fiction. We'll question which historical narratives are being told and which are being ignored, and we'll ask why and how genres like fantasy, sci-fi, fairy tales, and time travel are commonly used to bring stories of mass-violence to the public.

**SESP 381-0 BSED/BSJ Experiential Learning Community Workshop Series (0 Unit)** In their second year, students choose 1 experiential education requirement – either the SESP Practicum, Student Teaching, or Medill Journalism Residency for 4 units of credit. The students participate in the Community Workshop Series during the year they complete their experiential education requirement.

**SESP 390-0 Research Apprenticeship (1 Unit)** Opportunity to participate in faculty research projects. Prerequisites: consent of the faculty member and the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

**SESP 391-0 Advanced Research Design (1 Unit)** Overview of research methods that may be used to design and implement the honors thesis. Prerequisites: SESP 210-0 and SESP 272-0 recommended.

**SESP 392-0 Experiential Learning: Practicum (4 Units)**

**SESP 392-SA Experiential Learning: Practicum Study Abroad (4 Units)**

**SESP 398-0 Senior Thesis Seminar (1-3 Units)** Students develop, design, implement, and evaluate a research project under a faculty advisor's guidance. Prerequisites: senior status, cumulative GPA by the end winter quarter of the junior year, recommendation for the honors program from SESP 391-0 instructor(s); consent of program director.

**SESP 399-0 Independent Study (1 Unit)** Faculty-supervised study of special topics of the student's own choosing and not covered in regular courses. Prerequisites: consent of the supervising faculty member(s) and the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

## Human Development in Context Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### Concentration Program—16 units\*

\* 8 of the 16 units need to be at the 300-level

Course	Title
<b>Required Courses (6 units)</b>	
SESP 201-0 or PSYCH 244-0	Human Development: Childhood and Adolescence * Developmental Psychology
or <sup>1</sup>	
SESP 203-0 or HDC 310-0 or SESP 251-0	Human Development: Adulthood and Aging The Art and Science of Aging Special Topics
<i>Special Topic must be Coming of Age and Growing Old in the 21st Century</i>	
1 course for the Fundamentals cluster from:	
HDC 305-0	Identity and Motivation
HDC 307-0	Emotional Mysteries
PSYCH 215-0	Psychology of Personality
PSYCH 228-0	Cognitive Psychology
1 course for the Social Policy in Action cluster from:	
SESP 195-1	Civic Engagement 1- Participatory Policymaking
SESP 195-2	Civic Engagement 2: Participatory Budgeting
SESP 195-3	Civic Engagement 3: Organizing, Gathering & Policy implementation
SESP 351-0	Special Topics (Anthropology of Literacy)
HDC 330-0	Adolescent Stress: Sources and Solutions
SESP 320-0	Race and Education
SESP 322-0	Crafting Child Policy
SESP 325-0	Race, Adolescence, and School Discipline
SOC_POL 313-0	Race, Inequality, and the Political Analysis of Public Policy

SOC_POL 315-0	Global Human Trafficking
SOC_POL 331-0	Economics of Inequality and Discrimination
SOC_POL 351-0	Special Topics in Social Policy ( Social Opportunity and Education Policy or The Social Side of College: Understanding the Lived Experiences of Undergraduates or Global Education or Child and Family Policy or Intersectionality, Measurement and Public Policy or Religion and Policy or Education Policy Impact on Teachers)
1 course for the Learning and Cognition cluster from:	
HDC 305-0	Identity and Motivation
HDC/LOC 347-0	Mapping and Spatial Analysis for Social Issues
LOC/LRN_SCI 214-0 or LOC 214-BR	Culture and Cognition Culture and Cognition: SESP Leadership Institute
LOC 213-0	Cognition in Contexts
LRN_SCI 201-0 or LRN_SCI 251-0	Cognition and Action Special Topics in Learning Sciences <i>Special Topic must be Intro to Learning Sciences</i>
LRN_SCI 202-0	Culture, Language, & Identity
LOC 313-0	Learning and Thinking in Organizations
CSD 392-0	Language Development and Usage
TEACH_ED 309-0	Designing and Supporting Discourse-Rich Environments for Learning
TEACH_ED 329-0	Cognition and Culture in Teaching and Learning
COG_SCI 110-0	Introduction to Cognitive Science
1 course for the Social Relations cluster from:	
LOC/HDC 351-0	Topics in Learning and Organizational Change (Global Teams)
HDC 307-0	Emotional Mysteries
HDC/LOC 309-0	Team Dynamics
HDC 351-0	Special Topics in Human Development in Context (Identities, Intersections, and Organizations)
HDC 340-0	Building Loving and Lasting Relationships: Marriage 101
TEACH_ED/LRN_SCI 302-0	Social, Cultural, and Linguistic Contexts of Education
1 course for the Analysis cluster from:	
HDC 330-0	Adolescent Stress: Sources and Solutions
LRN_SCI 224-0	Holocaust Education Design
LRN_SCI 301-0	Design of Learning Environments
LRN_SCI 309-0	Inclusive Making
LRN_SCI 351-0	Topics in Learning Sciences
Topics include Indigenous Methods in Research or Text Mining for Education, Organizations and Social Science Research or Multimodal Storytelling on Migration for Learning Within and Across Communities	
SESP 260-0	Community Based Research Methodologies: Educational Justice
SESP 310-0	Causal Methods for Evaluating Policy
SESP 351-0	Special Topics (Intersectionality, Measurement, and Public Policy )
SESP 360-0	Magic Monsters & the Holocaust
SOC_POL 333-0	Economics of Health, Human Capital, and Happiness
SOC_POL 334-0	Quantitative Tools for Policy Analysis
<b>Concentration Extension Courses (10 units)</b>	
Must be selected from an approved list of courses in human development in context, other SESP concentrations, and disciplines such as anthropology, communication studies, linguistics, psychology, and sociology. Must include at least 4 courses at the 300 level. Up to 3 units of SESP 390-0 Research Apprenticeship or SESP 399-0 Independent Study and 3 units of SESP 398-0 Honors Thesis may be counted toward this requirement.	

\* PSYCH 110-0 Introduction to Psychology is a pre-requisite for PSYCH 244-0.

<sup>1</sup> HDC students who take SESP 201-0 Human Development: Childhood and Adolescence for the SESP Core can choose either SESP 203-0 Human Development: Adulthood and Aging or HDC 310-0 The Art and Science of Aging for the HDC Concentration. HDC students who take either SESP 203-0 or HDC 310-0 for the SESP Core can take SESP 201-0 for the HDC Concentration.

## SESP Core (8 units)

Course	Title
<b>Seminar—1 unit</b>	
SESP 200-0	Understanding Knowledge
<b>Human Development—1 unit</b>	
SESP 201-0 or PSYCH 244-0	Human Development: Childhood and Adolescence <sup>1</sup> Developmental Psychology
OR	
SESP 203-0	Human Development: Adulthood and Aging
OR	
HDC 310-0	The Art and Science of Aging
OR	
SESP 251-0	Special Topics (Coming of Age and Growing Old in the 21st Century)
OR	
HDC 351-0	Special Topics in Human Development in Context (Myths and Facts of Adolescence )
<b>Methodologies —2 units</b>	
SESP 210-0 or STAT 202-0 or STAT 210-0 or PSYCH 201-0 or SOCIO 303-0	Introduction to Statistics and Research Methodology Introduction to Statistics and Data Science Introduction to Probability and Statistics Statistical Methods in Psychology Analysis and Interpretation of Social Data
SESP 272-0	Field Research Methods
<b>Experiential Learning—4 units <sup>2</sup></b>	
SESP 392-0 or SESP 392-SA	Experiential Learning: Practicum Experiential Learning: Practicum Study Abroad

<sup>1</sup> PSYCH 110-0 Introduction to Psychology is a prerequisite for PSYCH 244-0 and PSYCH 201-0.

<sup>2</sup> This 4-unit course may be taken either for 1 quarter during junior year or for nine weeks during the Summer Session before or after junior year; no fifth unit may be taken concurrently without special permission. At least 2 quarters before registering for the course, students must consult the SESP practicum director regarding procedures and site-placement application materials. For Summer Session practicums, consultation should be scheduled at least 3 quarters in advance.

## Overlay Requirements\*

\* Overlay requirements are fulfilled by courses taken for the concentration

Course	Title
<b>Global Engagement</b>	
1 quarter of study abroad or 3 quarters of foreign language or equivalent.	

**Heterogeneities, Systems, and Inequalities**

1 course counted towards the concentration: HDC 305-0, LOC 214-0, LOC 214-BR, LOC 351-0 (Identities, Intersection, and Organizations or Global Organizations & Leadership), LRN\_SCI 202-0, LRN\_SCI 214-0, LRN\_SCI 224, LRN\_SCI 302-0, LRN\_SCI 309-0, LRN\_SCI 351-0 (Identity, Power, and the Historical Imaginary Across Social Contexts), SESP 195-0, SESP 251-0 (Finding Your Path: Future Possibilities and Social Change), SESP 260-0, SESP 323-0, LRN\_SCI 351-0 (Computing, Ethics, and Society), SESP 351-0 (Anthropology of Literacy or Anthropology of Education), SESP 360-0, SOC\_POL 313-0, SOC\_POL 315-0, SOC\_POL 331-0, SOC\_POL 333-0, SOC\_POL 351-0 (Intersectionality, Measurement, and Public Policy or Religion and Policy or Social Side of College), TEACH\_ED 301-0, TEACH\_ED 302-0, TEACH\_ED 329-0

**Methods in Context**

1 course counted towards the concentration: HDC 330-0, HDC 347-0, LOC 308-0, LOC 311-0, LOC 313-0, LOC 347-0, LRN\_SCI 224-0, LRN\_SCI 301-0, LRN\_SCI 309-0, LRN\_SCI 313-0, LRN\_SCI 326-0, LRN\_SCI 351-0 (Sports, Technology and Learning or Text Mining for Education, Organizations, and Social Science Research or Transforming Computer Science Education or Indigenous Methods in Research), LRN\_SCI 372-0, SESP 251-0 (Intro to Social Science Research), SESP 260-0, SESP 310-0, SESP 323-0, SESP 360-0, SOC\_POL 330-0, SOC\_POL 331-0, SOC\_POL 332-0, SOC\_POL 333-0, SOC\_POL 334-0, SOC\_POL 351-0 (Social Side of College or Intersectionality, Measurement, and Public Policy)

## Foundational Disciplines (10 units)

- 2 natural sciences (NS) courses
- 2 empirical and deductive reasoning (EDR) courses
- 2 historical studies (HS) courses
- 2 ethical and evaluative thinking (EET) courses
- 2 literature and arts (LA) courses

Selected courses from Weinberg College and professional schools across the University may be used to fulfill distribution requirements with the consent of the student's adviser and the SESP assistant dean for student affairs.

## Electives (8 units)

Courses from any school across the University may be used to fulfill elective requirements. Students are encouraged to discuss their elective plans with their advisers; they may be able to pursue a second major or a minor using elective credits.

## Learning and Organizational Change

[sesp.northwestern.edu/ugrad/learning-and-organizational-change](http://sesp.northwestern.edu/ugrad/learning-and-organizational-change)

The Learning and Organizational Change program examines formal and informal change among individuals, groups, organizations, and systems. Students study organizational change, learning, and design thinking to analyze systems, structures, and team dynamics through multiple perspectives and approaches. The program draws from theoretical and empirical research and practice from disciplines as diverse as organization and management sciences, learning sciences, sociology, psychology, economics, and design.

## Program of Study

- Learning and Organizational Change Major (p. 125)

**LOC 211-0 Intro to Organization Theory & Practice (1 Unit)** Examines major organizational behavior theories and practices through organizational analysis.

**LOC 213-0 Cognition in Contexts (1 Unit)** There are two goals for this course: (1) to equip you with some concepts and methods about cognition and learning that are useful for studying these phenomena 'in the wild' and then (2) to put these concepts and methods to use in a design/change project of your own.

**LOC 214-0 Culture and Cognition (1 Unit)** Research and theory on the interrelatedness of culture and thought. Combined with LRN\_SCI 214-0; may not receive credit for both courses.

**LOC 214-BR Culture and Cognition: SESP Leadership Institute (1 Unit)** Research and theory on the interrelatedness of culture and thought. This version of LOC 214 is only for students participating in the SESP Leadership Institute. Students may not receive credit for the SLI version and LRN\_SCI 214-0 / LOC 214-0.

**LOC 306-0 Studies in Organizational Change (1 Unit)** Examines theories and methods of organizational change through analysis of organizational adaptations; applies theories from learning sciences and organizational behavior.

**LOC 308-0 Redesigning Everyday Organizations (1 Unit)** Concepts and methods for understanding and studying cognition and learning and putting these concepts and methods to use in a design/change project. Taught with LRN\_SCI 308-0; may not receive credit for both courses.

**LOC 309-0 Team Dynamics (1 Unit)** In this course, we will explore team dynamics, those forces that influence a team's behavior and performance, and what can enhance or hinder potential for impact. We will analyze the contributors to team functioning and their interrelationships at multiple levels: intrapersonal, interpersonal, group and organizational. Key topics include team development, team make-up and roles, leadership and followership, decision-making, navigating conflict, collaboration and competition, effective communication, content vs. process, diversity and in-group/out-group tensions. Throughout the class, students will be analyzing and applying concepts through case studies and simulations. Assignments to demonstrate mastery include regular written individual papers and a team project. This course is suitable for undergraduate students in LOC, Human Development in Context, and related majors throughout Northwestern that are interested in leadership, teams/groups or organizational change. Taught with HDC 309-0; may not receive credit for both courses.

**LOC 311-0 Tools for Organizational Analysis (1 Unit)** Understanding cause-and-effect relationships pertaining to organizational behavior and performance.

**LOC 312-0 Modern Organization and Innovations (1 Unit)** Advances in technologies, from computation to analytics to new models of management and organizations, has radically transformed both everyday work and classic models of management and organization. This course takes a novel approach to understanding these transformations by partnering a SESP faculty member with industry leaders and change agents to identify and analyze changing organizational forms and the implications for work in the contemporary economy. In doing so, this course will expose students to variants in organizational models, for example, from the highly institutionalized, yet ever changing, digital firm to firm-market hybrids that supply branded service yet do not employ the providers or own the assets that provide services. Students will have weekly analytic assignments that prepare for and reflect on industry co-instructor sessions as well as a final team project. This course is suitable for undergraduate students in LOC, social policy, and related majors throughout Northwestern that are interested in leadership or organizational change. This advanced, highly interactive course fulfills new Learning and Organizational Change (LOC) requirements and is open to LOC students and beyond.

**LOC 313-0 Learning and Thinking in Organizations (1 Unit)** Learning & Thinking in Organizations explores human judgment and decision making under conditions of uncertainty. You will learn to recognize recurring patterns in your own cognition and that of the people around you, and examine the ways those tendencies can lead people to better or worse courses of action. The class opens with a focus on the work of two research psychologists, Amos Tversky and Daniel Kahneman, who developed an important framework for understanding how people reach conclusions and make decisions. Their work formed the foundation of the field of behavioral economics. As we move through the quarter, we will draw on this framework to analyze human judgment and organizational decisionmaking in the domains of medicine, public health, criminal justice, and sports. We will investigate ways to use insights from research to improve the functioning of organizations, with a goal of making life better for the people that work in them and the people they serve. In the final project, working either independently or in a group, you will research an organizational phenomenon and develop a design for change using the theoretical perspectives from the course. Grading is based on quizzes, a midterm, and a final project.

**LOC 347-0 Mapping and Spatial Analysis for Social Issues (1 Unit)** The focus of the course is on using the power of geospatial analysis to identify, understand, and make recommendations about addressing social, racial, and other inequities, including access to healthy food, environmental pollution, policing, etc. Students will learn basic use of the ArcGIS online program to support geospatial analysis.

**LOC 351-0 Topics in Learning and Organizational Change (1 Unit)**  
Advanced work on special topics.

**SESP 114-0 Summer Internship (0 Unit)**

**SESP 115-0 Internship (0 Unit)**

**SESP 116-0 Finding Your Path (0 Unit)** A continuation of Finding Your Path: Pathways and Future Possibilities (SESP 251), a course that supports second-year students most impacted by the historical and contemporary realities of classism and racism as they map their path forward to career fulfillment. This class is a 0 credit class in which Pathways students conduct a search for a summer internship and then complete said internship.

**SESP 195-1 Civic Engagement 1- Participatory Policymaking (1 Unit)** Policy implementation involves more than just identifying and researching options, policymakers must consider design program design, costs & sustainability; political feasibility, and building political support. In this class, you will learn how to design policy for implementation through Northwestern's Participatory Budgeting process.

**SESP 195-2 Civic Engagement 2: Participatory Budgeting (1 Unit)** Democracy gives limited opportunities for citizens to influence decision-making. In this class you will learn to implement open democracy innovations, that are more inclusive, more representative, and lead to better policy outcomes, by implementing a campus-wide participatory budgeting process, where community decides how to spend \$1000 to address climate change.

**SESP 195-3 Civic Engagement 3: Organizing, Gathering & Policy implementation (1 Unit)** How do we motivate people to take action? In this class, you will learn the techniques of relational organizing (canvassing, one-on-ones, public narrative), designing civic gatherings (Civic Saturdays) that move people to action to build social movements. You will also oversee policy implementation of community development projects selected in the participatory budgeting process.

**SESP 200-0 Understanding Knowledge (1 Unit)** What does it mean to know something? What are the different types of knowledge and what

distinguishes them from one another? What counts as fact vs. opinion vs. belief and so on; who gets to decide and under what conditions? How is knowledge produced and how does it gain traction? How does the source and type of knowledge interact with socio-political-cultural constructs and systems of power and, in turn, how can "knowledge" be used to produce and/or perpetuate power and privilege or to empower those who are marginalized? Finally, how does what we do in SESP and at Northwestern as both consumers and producers of knowledge fit within the landscape of these questions? In this course students will explore these and other questions to gain insight into the social production, distribution, consumption, interpretation, and operationalization of "knowledge." Using primarily seminar-style discussion, the first portion of the course focuses on building and analyzing theoretical frameworks and applied texts in order to generate a working understanding of "knowledge" in its myriad forms. Among our goals for the first portion of the course is to tie theoretical, academic, and "folk" knowledges to everyday experiences and the world around us writ large. The second portion of the class will involve a series of applied cases studies, including welcoming members of the SESP faculty community to present on their research, which we will work to bring into conversation with our generated frameworks regarding the sources, types, and implications of knowledge.

**SESP 201-0 Human Development: Childhood and Adolescence (1 Unit)** Personal, social, and cognitive development from birth through adolescence. Interplay of biological and experiential factors on linguistic and conceptual development, ego, and personality.

**SESP 203-0 Human Development: Adulthood and Aging (1 Unit)** Psychological, sociological, and biological factors influencing socialization and development from young and middle adulthood through old age. Influences of family, school, and work on the individual.

**SESP 204-0 Designing for Social Change (1 Unit)** A key goal of this course is to acquire an intellectual and applied understanding of the principles of program design and development, which include a sustained consideration of issues affecting the quality of program implementation. This course is best suited for FIRST AND SECOND YEAR students.

**SESP 210-0 Introduction to Statistics and Research Methodology (1 Unit)** Definitions and classifications of terms used in quantitative methods; measures of typical and maximum performance, reliability, and validity checks; reporting and displaying data; interpreting results.

**SESP 218-0 Leaders Lab (1 Unit)** Leaders Lab is an interactive, engaging and dynamic fall quarter course that was created and designed for incoming first and second-year students in SESP to reflect, experience and engage in dialogue about the "big" questions in life such as: who am I? What is my purpose in life? How can I be me? What are my responsibilities to the communities I'm a part of? Why do I serve? What is leadership? How can I lead? This course is associated with the SESP Leadership Institute. Only students enrolled in the leadership institute can register for this course.

**SESP 251-0 Special Topics (1 Unit)** N/A.

**SESP 260-0 Community Based Research Methodologies: Educational Justice (1 Unit)** This course examines the histories, ideas, practices, relations and possible futures that shape struggles for educational justice and human thriving. The course is unique in that it brings together an intergenerational group of thinkers and learners (high school students, undergraduate students, youth workers, graduate students, professors, high school teachers and community members) to engage in collaborative study, reflection and design.

**SESP 272-0 Field Research Methods (1 Unit)** Guided practice in systematic and participant observation. Observer bias, field notes, unobtrusive measures.

**SESP 291-1 Peer-Led Learning: Theory and Practice (0.25 Unit)** SESP 291 is the training program for students working as first-time mentors in the Peer Leaders program. It is taken over two academic quarters, with each quarter offering .25 credit (a total of .5 credit). You will receive a "K" grade for fall quarter, which means you are continuing in the course. After winter quarter, you will receive a letter grade which will be retroactively applied to fall quarter.

**SESP 291-2 Peer-Led Learning: Theory and Practice (0.25 Unit)**

**SESP 295-1 Leadership Studio I (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to students who have completed the first year sequence of the certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SESP 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SESP 195-1, 195-2, 195-3 to enroll.

**SESP 295-2 Leadership Studio II (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to student who have completed the first year sequence of the Civic Engagement Certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SESP 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SESP 195-1, 195-2, 195-3 to enroll.

**SESP 298-0 Student Organized Seminar (1 Unit)** Courses proposed by students and supervised by faculty sponsors on special topics approved by the SESP undergraduate education director. May be taken only once per quarter; pass/no credit only. Consultation with the SESP student affairs assistant dean advised.

**SESP 299-1 Civic Engagement Capstone Research (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 299-2 Certificate in Civic Engagement- Capstone Project (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 310-0 Causal Methods for Evaluating Policy (1 Unit)** This course will provide students with a framework for understanding causal inference and a toolkit for making causal claims using quantitative data. Prerequisites: Students need to have taken SESP 210-0 or any 200-level STATS course.

**SESP 320-0 Race and Education (1 Unit)** Conceptual underpinnings of the construct of race and how conceptions of race have influenced the course of education in the United States.

**SESP 322-0 Crafting Child Policy (1 Unit)** This course is open to undergraduate students interested in the intersection of child development, social policy, and applied research. The course will guide students in how to apply psychological theory and rigorous research methods to the study of child and family policies in real-world settings. Working in groups, students will have the opportunity to answer pressing questions posed by the Illinois Governor's Office

of Early Childhood Education and Chicago's Office of the Mayor. Group projects have the potential to help inform the structure and development of the state's innovative policies for young children (birth to 8) and their families.

**SESP 323-0 Trauma and Atrocity: Holocaust Memory, Memorial and Museums (1 Unit)** What is Holocaust memory? How has Holocaust memory changed over time, and how does the Holocaust continue to affect our understanding of trauma, atrocity, and human rights today? This seminar addresses individual memory, including survivor and witness testimony, memory and trauma, and the impact of the Holocaust on survivors' families and communities.

**SESP 324-0 Pedagogies for History and Injustice: Holocaust Education Design (1 Unit)** N/A.

**SESP 325-0 Race, Adolescence, and School Discipline (1 Unit)** In recent years, racial disparities in school discipline have attracted the attention of educators, policymakers, parents, and the general public. Why is it so hard for legal, political, and educational institutions to improve school discipline? How do intersections of race, gender, and social class matter for students' experiences of school discipline? Are there schools that are getting discipline right? What does that look like, and to what extent can other schools learn from their successes? In this course, we will learn about evidence-based policy improvements and imagine how to create schools where race does not predict discipline.

**SESP 351-0 Special Topics (1 Unit)** Advanced work on special topics.

**SESP 351-SA Special Topics (1 Unit)** Advanced work on special topics. This course is limited to students approved to study abroad through the Global Learning Office (GLO).

**SESP 360-0 Magic Monsters & the Holocaust (1 Unit)** In this course, we'll explore public learning about the Holocaust through popular film and fiction. We'll question which historical narratives are being told and which are being ignored, and we'll ask why and how genres like fantasy, sci-fi, fairy tales, and time travel are commonly used to bring stories of mass-violence to the public.

**SESP 381-0 BSED/BSJ Experiential Learning Community Workshop Series (0 Unit)** In their second year, students choose 1 experiential education requirement – either the SESP Practicum, Student Teaching, or Medill Journalism Residency for 4 units of credit. The students participate in the Community Workshop Series during the year they complete their experiential education requirement.

**SESP 390-0 Research Apprenticeship (1 Unit)** Opportunity to participate in faculty research projects. Prerequisites: consent of the faculty member and the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

**SESP 391-0 Advanced Research Design (1 Unit)** Overview of research methods that may be used to design and implement the honors thesis. Prerequisites: SESP 210-0 and SESP 272-0 recommended.

**SESP 392-0 Experiential Learning: Practicum (4 Units)**

**SESP 392-SA Experiential Learning: Practicum Study Abroad (4 Units)**

**SESP 398-0 Senior Thesis Seminar (1-3 Units)** Students develop, design, implement, and evaluate a research project under a faculty advisor's guidance. Prerequisites: senior status, cumulative GPA by the end winter quarter of the junior year, recommendation for the honors program from SESP 391-0 instructor(s); consent of program director.

**SESP 399-0 Independent Study (1 Unit)** Faculty-supervised study of special topics of the student's own choosing and not covered in regular courses. Prerequisites: consent of the supervising faculty member(s) and

the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

## Learning and Organizational Change Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### Concentration Program—16 units\*

\* 8 of the 16 units need to be at the 300-level

Course	Title
<b>Required Courses (7 units)</b>	
LOC 211-0	Intro to Organization Theory & Practice
LOC 306-0	Studies in Organizational Change
1 course for the Sociocultural cluster from:	
SESP 351-0	Special Topics (Anthropology of Literacy)
LRN_SCI/TEACH_ED 302-0	Social, Cultural, and Linguistic Contexts of Education
LOC 213-0	Cognition in Contexts
LOC/LRN_SCI 214-0 or LOC 214-BR	Culture and Cognition: SESP Leadership Institute
LOC/LRN_SCI 308-0	Redesigning Everyday Organizations
LOC 351-0	Topics in Learning and Organizational Change (Identities, Intersections, and Organizations)
1 course for the Cognitive Psychology cluster from:	
LRN_SCI 201-0	Cognition and Action
LOC 313-0	Learning and Thinking in Organizations
LOC/HDC 347-0	Mapping and Spatial Analysis for Social Issues
COG_SCI 110-0	Introduction to Cognitive Science
COG_SCI 211-0	Learning, Representation & Reasoning
MUS_THRY 251-0	Intro to Music Cognition
1 course for the Organizational Design cluster from:	
LRN_SCI 224-0	Holocaust Education Design
LRN_SCI 301-0	Design of Learning Environments
LRN_SCI 309-0	Inclusive Making
LRN_SCI 326-0	Design of Technological Tools for Thinking and Learning
LRN_SCI 351-0	Topics in Learning Sciences (Sports, Technology and Learning or Identity, Power, and the Historical Imaginary Across Social Contexts)
LOC/LRN_SCI 308-0	Redesigning Everyday Organizations
LOC 351-0	Topics in Learning and Organizational Change (Global Organizations Design and Leadership)
SESP 323-0	Trauma and Atrocity: Holocaust Memory, Memorial and Museums
SESP 195-1	Civic Engagement 1- Participatory Policymaking
SESP 195-2	Civic Engagement 2: Participatory Budgeting
SESP 195-3	Civic Engagement 3: Organizing, Gathering & Policy implementation
SOCIOL 302-0	Sociology of Organizations
TEACH_ED 309-0	Designing and Supporting Discourse-Rich Environments for Learning
2 courses for the Organizational Analysis cluster from:	
LOC/HDC 309-0	Team Dynamics
LOC 311-0	Tools for Organizational Analysis

LOC 312-0	Modern Organization and Innovations
LOC 351-0	Topics in Learning and Organizational Change (Identities, Intersections, and Organizations or Analysis of Global Teams)
LRN_SCI 351-0	Topics in Learning Sciences (Text Mining for Education, Organizations and Social Science Research or Computing, Ethics, and Society)
SOC_POL 312-0	Social Policymaking and Implementation
SOC_POL 334-0	Quantitative Tools for Policy Analysis
SOC_POL 351-0	Special Topics in Social Policy (Religion and Policy)
SESP 310-0	Causal Methods for Evaluating Policy
SOCIOL 302-0	Sociology of Organizations

#### Concentration Extension Course (9 units)

Must be selected from an approved list of courses in LOC, other SESP concentrations, and disciplines such as cognitive science, communication studies, computer science, economics, psychology, and sociology. Must include at least 4 courses at the 300 level. Up to 3 units of SESP 390-0 Research Apprenticeship or SESP 399-0 Independent Study and 3 units of SESP 398-0 Honors Thesis may be counted toward this requirement.

## SESP Core (8 units)

Course	Title
<b>Seminar—1 unit</b>	
SESP 200-0	Understanding Knowledge
<b>Human Development—1 unit</b>	
SESP 201-0 or PSYCH 244-0	Human Development: Childhood and Adolescence <sup>1</sup> Developmental Psychology
OR	
SESP 203-0	Human Development: Adulthood and Aging
OR	
HDC 310-0	The Art and Science of Aging
OR	
SESP 251-0	Special Topics (Coming of Age and Growing Old in the 21st Century)
OR	
HDC 351-0	Special Topics in Human Development in Context (Myths and Facts of Adolescence)
<b>Methodologies —2 units</b>	
SESP 210-0 or STAT 202-0	Introduction to Statistics and Research Methodology Introduction to Statistics and Data Science
or STAT 210-0	Introduction to Probability and Statistics
or PSYCH 201-0	Statistical Methods in Psychology
or SOCIOL 303-0	Analysis and Interpretation of Social Data
SESP 272-0	Field Research Methods
<b>Experiential Learning—4 units<sup>2</sup></b>	
SESP 392-0 or SESP 392-SA	Experiential Learning: Practicum Experiential Learning: Practicum Study Abroad

<sup>1</sup> PSYCH 110-0 Introduction to Psychology is a prerequisite for PSYCH 244-0 and PSYCH 201-0.

<sup>2</sup> This 4-unit course may be taken either for 1 quarter during junior year or for nine weeks during the Summer Session before or after junior year; no fifth unit may be taken concurrently without special permission. At least 2 quarters before registering for the course, students must consult the SESP practicum director regarding procedures and site-placement application materials. For Summer Session practicums, consultation should be scheduled at least 3 quarters in advance.

## Overlay Requirements\*

\* Overlay requirements are fulfilled by courses taken for the concentration

Course	Title
<b>Global Engagement</b>	
1 quarter of study abroad or 3 quarters of foreign language or equivalent.	
<b>Heterogeneities, Systems, and Inequalities</b>	
1 course counted towards the concentration: HDC 305-0, LOC 214-0, LOC 214-BR, LOC 351-0 (Identities, Intersection, and Organizations or Global Organizations & Leadership), LRN_SCI 202-0, LRN_SCI 214-0, LRN_SCI 224, LRN_SCI 302-0, LRN_SCI 309-0, LRN_SCI 351-0 (Identity, Power, and the Historical Imaginary Across Social Contexts), SESP 195-0, SESP 251-0 (Finding Your Path: Future Possibilities and Social Change), SESP 260-0, SESP 323-0, LRN_SCI 351-0 (Computing, Ethics, and Society), SESP 351-0 (Anthropology of Literacy or Anthropology of Education), SESP 360-0, SOC_POL 313-0, SOC_POL 315-0, SOC_POL 331-0, SOC_POL 333-0, SOC_POL 351-0 (Intersectionality, Measurement, and Public Policy or Religion and Policy or Social Side of College), TEACH_ED 301-0, TEACH_ED 302-0, TEACH_ED 329-0	
<b>Methods in Context</b>	
1 course counted towards the concentration: HDC 330-0, HDC 347-0, LOC 308-0, LOC 311-0, LOC 313-0, LOC 347-0, LRN_SCI 224-0, LRN_SCI 301-0, LRN_SCI 309-0, LRN_SCI 313-0, LRN_SCI 326-0, LRN_SCI 351-0 (Sports, Technology and Learning or Text Mining for Education, Organizations, and Social Science Research or Transforming Computer Science Education or Indigenous Methods in Research), LRN_SCI 372-0, SESP 251-0 (Intro to Social Science Research), SESP 260-0, SESP 310-0, SESP 323-0, SESP 360-0, SOC_POL 330-0, SOC_POL 331-0, SOC_POL 332-0, SOC_POL 333-0, SOC_POL 334-0, SOC_POL 351-0 (Social Side of College or Intersectionality, Measurement, and Public Policy)	

## Foundational Disciplines (10 units)

- 2 natural sciences (NS) courses
- 2 empirical and deductive reasoning (EDR) courses
- 2 historical studies (HS) courses
- 2 ethical and evaluative thinking (EET) courses
- 2 literature and arts (LA) courses

Selected courses from Weinberg College and professional schools across the University may be used to fulfill distribution requirements with the consent of the student's adviser and the SESP assistant dean for student affairs.

## Electives (8 units)

Courses from any school across the University may be used to fulfill elective requirements. Students are encouraged to discuss their elective plans with their advisers; they may be able to pursue a second major or a minor using elective credits.

## Learning Sciences

[sesp.northwestern.edu/ugrad/learning-sciences.html](http://sesp.northwestern.edu/ugrad/learning-sciences.html)

The Learning Sciences concentration involves understanding and promoting learning in a wide range of social contexts. Students learn about the most up-to-date theories of learning and applied design, including new technologies, learning environments, curriculum, social arrangements, and space. Learning Sciences is an appropriate academic choice for students who are interested in education technology, instructional design, museum education, educational research, curriculum design, and workplace learning. Courses examine the role

of social and cultural contexts in learning, cognition and the processes through which individual learning takes place, and design and evaluation of learning environments using a variety of tools, techniques, and theoretical perspectives. Students choose interdisciplinary courses from anthropology, linguistics, education, computer science, psychology, and cognitive science. Students must choose one specialization: learning in schools, out-of-school learning, or design of learning environments. Students are strongly encouraged to develop a senior-year capstone project based on one or more learning sciences courses.

## Program of Study

- Learning Sciences Major (p. 129)

**LRN\_SCI 201-0 Cognition and Action (1 Unit)** Perspectives on thinking and learning; how individuals reason and accomplish tasks, both on their own and in interaction with each other and with their immediate environments.

**LRN\_SCI 202-0 Culture, Language, & Identity (1 Unit)** Social and cultural dimensions of learning, particularly how diverse linguistic and cultural tools mediate forms of identity, learning experiences, and participation in and transformation of social life.

**LRN\_SCI 214-0 Culture and Cognition (1 Unit)** Explore the cultural ground of cognition. How do cultural environments structure and orient our conceptual knowledge, and how do these cognitive processes feedback into cultural systems? Key topics include conceptual development, knowledge organization, causal reasoning, moral psychology, and environmental psychology. Jointly, the topics are integrated through a focus on social and ecological thought. We will engage in cultural artifact analyses, field experiences, and research inquiries. Combined with LOC 214-0; may not receive credit for both courses.

**LRN\_SCI 224-0 Holocaust Education Design (1 Unit)**

**LRN\_SCI 251-0 Special Topics in Learning Sciences (1 Unit)**

**LRN\_SCI 301-0 Design of Learning Environments (1 Unit)** Conceiving, building, and testing products and services to help people learn. Topics include the human-centered design process, principles for designing learning environments, and agile project management and communication techniques.

**LRN\_SCI 302-0 Social, Cultural, and Linguistic Contexts of Education (1 Unit)** This course focuses on the social and contextual influences of education, from a learning, teaching, research, and policy perspective. We will examine the role of race, ethnicity, class, gender, sexuality, and identity in the ways individuals and groups influence and are influenced by our education system.

**LRN\_SCI 308-0 Redesigning Everyday Organizations (1 Unit)** Concepts and methods for understanding and studying cognition and learning and putting these concepts and methods to use in a design/change project. Combined with LOC 308-0; may not receive credit for both courses.

**LRN\_SCI 309-0 Inclusive Making (1 Unit)** The goals of this course are to push students to 1) critically explore Making as a practice that promotes democratization, 2) develop interfaces that allow a broader population of students to participate in digital fabrication and 3) design artifacts that positively impact accessibility and inclusivity. The course will include guest speakers, laboratory portions and projects that encourage students to develop publishable scholarship and/or functional prototypes, as they work in interdisciplinary teams. This is a hands-on project course. All students will design and implement interactive technologies. For this reason you will be expected to do

computer programming and digital fabrication. However, all projects can be completed in teams. Hence, it is not essential that all students come with prior knowledge in computer programming and digital fabrication. Additionally, a portion of class and office hours will be devoted to helping students gain familiarity in basic digital fabrication and computer programming.

**LRN\_SCI 313-0 Tangible Interaction Design and Learning (1 Unit)**

Explores the use of tangible interaction to create innovative learning experiences, including distributed cognition, embodied interaction, cultural forms, and design frameworks. Combined with COMP\_SCI 313-0; may not receive credit for both courses. Prerequisite: COMP\_SCI 110-0.

**LRN\_SCI 323-0 Holocaust Memory, Memorial and Museum (1 Unit)**

What is Holocaust memory? How has Holocaust memory changed over time, and how does the Holocaust continue to affect our understanding of trauma, atrocity, and human rights today? This seminar addresses individual memory, including survivor and witness testimony, memory and trauma, and the impact of the Holocaust on survivors' families and communities. We also explore collective Holocaust memory and the development of mainstream framings of Holocaust history. We consider Jewish, Roma, and other victim narratives, including national memorialization, rituals of commemoration, and the development of Holocaust memorials, museums, and institutions in the United States and around the world. And we study how we have come to remember the Nazi perpetrators and their collaborators. We draw on course texts, including film and fiction, to ask questions about the relationships between individual and collective memories, as well as between commemoration and education.

**LRN\_SCI 326-0 Design of Technological Tools for Thinking and Learning (1 Unit)**

Constructionist approach to design. Participants discuss learning design literature, critique software, and design and build computer-based learning environments (CBLE).

**LRN\_SCI 338-0 Learning and Teaching with Technology (1 Unit)**

Theory and practice of designing school environments that integrate new technologies and media. Combined with TEACH\_ED 338-0; may not receive credit for both courses.

**LRN\_SCI 351-0 Topics in Learning Sciences (1 Unit)**

**LRN\_SCI 372-0 Designing and Constructing Models with Multi-agent Languages (1 Unit)**

Exploration and analysis of multi-agent models,

which simulate "emergent" scientific phenomena in a wide variety of

content domains. Combined with COMP\_SCI 372-0; may not receive

credit for both courses.

**SESP 114-0 Summer Internship (0 Unit)**

**SESP 115-0 Internship (0 Unit)**

**SESP 116-0 Finding Your Path (0 Unit)**

A continuation of Finding Your Path: Pathways and Future Possibilities (SESP 251), a course that supports second-year students most impacted by the historical and contemporary realities of classism and racism as they map their path forward to career fulfillment. This class is a 0 credit class in which Pathways students conduct a search for a summer internship and then complete said internship.

**SESP 195-1 Civic Engagement 1- Participatory Policymaking (1 Unit)**

Policy implementation involves more than just identifying and researching options, policymakers must, consider design program design, costs & sustainability; political feasibility, and building political support. In this class, you will learn how to design policy for implementation through Northwestern's Participatory Budgeting process.

**SESP 195-2 Civic Engagement 2: Participatory Budgeting (1 Unit)**

Democracy gives limited opportunities for citizens to influence decision-making. In this class you will learn to implement open democracy innovations, that are more inclusive, more representative, and lead to better policy outcomes, by implementing a campus-wide participatory budgeting process, where community decides how to spend \$1000 to address climate change.

**SESP 195-3 Civic Engagement 3: Organizing, Gathering & Policy**

**implementation (1 Unit)** How do we motivate people to take action? In this class, you will learn the techniques of relational organizing (canvassing, one-on-ones, public narrative), designing civic gatherings (Civic Saturdays) that move people to action to build social movements. You will also oversee policy implementation of community development projects selected in the participatory budgeting process.

**SESP 200-0 Understanding Knowledge (1 Unit)** What does it mean to know something? What are the different types of knowledge and what distinguishes them from one another? What counts as fact vs. opinion vs. belief and so on; who gets to decide and under what conditions? How is knowledge produced and how does it gain traction? How does the source and type of knowledge interact with socio-political-cultural constructs and systems of power and, in turn, how can "knowledge" be used to produce and/or perpetuate power and privilege or to empower those who are marginalized? Finally, how does what we do in SESP and at Northwestern as both consumers and producers of knowledge fit within the landscape of these questions? In this course students will explore these and other questions to gain insight into the social production, distribution, consumption, interpretation, and operationalization of "knowledge." Using primarily seminar-style discussion, the first portion of the course focuses on building and analyzing theoretical frameworks and applied texts in order to generate a working understanding of "knowledge" in its myriad forms. Among our goals for the first portion of the course is to tie theoretical, academic, and "folk" knowledges to everyday experiences and the world around us writ large. The second portion of the class will involve a series of applied cases studies, including welcoming members of the SESP faculty community to present on their research, which we will work to bring into conversation with our generated frameworks regarding the sources, types, and implications of knowledge.

**SESP 201-0 Human Development: Childhood and Adolescence (1 Unit)**

Personal, social, and cognitive development from birth through adolescence. Interplay of biological and experiential factors on linguistic and conceptual development, ego, and personality.

**SESP 203-0 Human Development: Adulthood and Aging (1 Unit)**

Psychological, sociological, and biological factors influencing socialization and development from young and middle adulthood through old age. Influences of family, school, and work on the individual.

**SESP 204-0 Designing for Social Change (1 Unit)** A key goal of this course is to acquire an intellectual and applied understanding of the principles of program design and development, which include a sustained consideration of issues affecting the quality of program implementation. This course is best suited for FIRST AND SECOND YEAR students.

**SESP 210-0 Introduction to Statistics and Research Methodology (1 Unit)**

Definitions and classifications of terms used in quantitative methods; measures of typical and maximum performance, reliability, and validity checks; reporting and displaying data; interpreting results.

**SESP 218-0 Leaders Lab (1 Unit)** Leaders Lab is an interactive, engaging and dynamic fall quarter course that was created and designed for incoming first and second-year students in SESP to reflect, experience and engage in dialogue about the "big" questions in life such as: who

am I? What is my purpose in life? How can I be me? What are my responsibilities to the communities I'm a part of? Why do I serve? What is leadership? How can I lead? This course is associated with the SESP Leadership Institute. Only students enrolled in the leadership institute can register for this course.

**SESP 251-0 Special Topics (1 Unit)** N/A.

**SESP 260-0 Community Based Research Methodologies: Educational Justice (1 Unit)** This course examines the histories, ideas, practices, relations and possible futures that shape struggles for educational justice and human thriving. The course is unique in that it brings together an intergenerational group of thinkers and learners (high school students, undergraduate students, youth workers, graduate students, professors, high school teachers and community members) to engage in collaborative study, reflection and design.

**SESP 272-0 Field Research Methods (1 Unit)** Guided practice in systematic and participant observation. Observer bias, field notes, unobtrusive measures.

**SESP 291-1 Peer-Led Learning: Theory and Practice (0.25 Unit)** SES 291 is the training program for students working as first-time mentors in the Peer Leaders program. It is taken over two academic quarters, with each quarter offering .25 credit (a total of .5 credit). You will receive a "K" grade for fall quarter, which means you are continuing in the course. After winter quarter, you will receive a letter grade which will be retroactively applied to fall quarter.

**SESP 291-2 Peer-Led Learning: Theory and Practice (0.25 Unit)**

**SESP 295-1 Leadership Studio I (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to students who have completed the first year sequence of the certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SES 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SES 195-1, 195-2, 195-3 to enroll.

**SESP 295-2 Leadership Studio II (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to student who have completed the first year sequence of the Civic Engagement Certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SES 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SES 195-1, 195-2, 195-3 to enroll.

**SESP 298-0 Student Organized Seminar (1 Unit)** Courses proposed by students and supervised by faculty sponsors on special topics approved by the SESP undergraduate education director. May be taken only once per quarter; pass/no credit only. Consultation with the SESP student affairs assistant dean advised.

**SESP 299-1 Civic Engagement Capstone Research (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 299-2 Certificate in Civic Engagement- Capstone Project (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 310-0 Causal Methods for Evaluating Policy (1 Unit)** This course will provide students with a framework for understanding causal inference and a toolkit for making causal claims using quantitative data. Prerequisites: Students need to have taken SESP 210-0 or any 200-level STATS course.

**SESP 320-0 Race and Education (1 Unit)** Conceptual underpinnings of the construct of race and how conceptions of race have influenced the course of education in the United States.

**SESP 322-0 Crafting Child Policy (1 Unit)** This course is open to undergraduate students interested in#the intersection of child development, social policy, and#applied #research. The course will guide students in how to apply psychological theory and rigorous research methods to the study of child and family policies in real-world settings. Working in groups, students will have the opportunity to answer pressing,#current#questions posed by the#Illinois #Governor's Office of Early Childhood Education and Chicago's Office of the Mayor. Group projects have the potential to help inform the structure and development of the state's#innovative#policies for young children (birth to 8) and #their #families.

**SESP 323-0 Trauma and Atrocity: Holocaust Memory, Memorial and Museums (1 Unit)** What is Holocaust memory? How has Holocaust memory changed over time, and how does the Holocaust continue to affect our understanding of trauma, atrocity, and human rights today? This seminar addresses individual memory, including survivor and witness testimony, memory and trauma, and the impact of the Holocaust on survivors' families and communities.

**SESP 324-0 Pedagogies for History and Injustice: Holocaust Education Design (1 Unit)** N/A.

**SESP 325-0 Race, Adolescence, and School Discipline (1 Unit)** In recent years, racial disparities in school discipline have attracted the attention of educators, policymakers, parents, and the general public. Why is it so hard for legal, political, and educational institutions to improve school discipline? How do intersections of race, gender, and social class matter for students' experiences of school discipline? Are there schools that are getting discipline right? What does that look like, and to what extent can other schools learn from their successes? In this course, we will learn about evidence-based policy improvements and imagine how to create schools where race does not predict discipline.

**SESP 351-0 Special Topics (1 Unit)** Advanced work on special topics.

**SESP 351-SA Special Topics (1 Unit)** Advanced work on special topics. This course is limited to students approved to study abroad through the Global Learning Office (GLO).

**SESP 360-0 Magic Monsters & the Holocaust (1 Unit)** In this course, we'll explore public learning about the Holocaust through popular film and fiction. We'll question which historical narratives are being told and which are being ignored, and we'll ask why and how genres like fantasy, sci-fi, fairy tales, and time travel are commonly used to bring stories of mass-violence to the public.

**SESP 381-0 BSED/BSJ Experiential Learning Community Workshop Series (0 Unit)** In their second year, students choose 1 experiential education requirement – either the SESPracticum, Student Teaching, or Medill Journalism Residency for 4 units of credit. The students participate in the Community Workshop Series during the year they complete their experiential education requirement.

**SESP 390-0 Research Apprenticeship (1 Unit)** Opportunity to participate in faculty research projects. Prerequisites: consent of the faculty member and the SESP assistant dean for student affairs; submission

of completed Request for Independent Study/Special Courses Form at registration.

**SESP 391-0 Advanced Research Design (1 Unit)** Overview of research methods that may be used to design and implement the honors thesis. Prerequisites: SESP 210-0 and SESP 272-0 recommended.

#### SESP 392-0 Experiential Learning: Practicum (4 Units)

#### SESP 392-SA Experiential Learning: Practicum Study Abroad (4 Units)

**SESP 398-0 Senior Thesis Seminar (1-3 Units)** Students develop, design, implement, and evaluate a research project under a faculty advisor's guidance. Prerequisites: senior status, cumulative GPA by the end winter quarter of the junior year, recommendation for the honors program from SESP 391-0 instructor(s); consent of program director.

**SESP 399-0 Independent Study (1 Unit)** Faculty-supervised study of special topics of the student's own choosing and not covered in regular courses. Prerequisites: consent of the supervising faculty member(s) and the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

## Learning Sciences Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Concentration Program—16 units\*

\* 8 of the 16 units need to be at the 300-level

Course	Title
<b>Required Courses (9 units)</b>	
LRN_SCI 201-0 or LRN_SCI 251-0	Cognition and Action Special Topics in Learning Sciences <i>Special Topic must be Intro to Learning Sciences</i>
LRN_SCI 202-0	Culture, Language, & Identity
LRN_SCI 301-0	Design of Learning Environments
1 course for the Cognition cluster from:	
COG_SCI 110-0	Introduction to Cognitive Science
COG_SCI 207-0	Introduction to Cognitive Modeling
COG_SCI 211-0	Learning, Representation & Reasoning
HDC/LOC 347-0	Mapping and Spatial Analysis for Social Issues
PSYCH 228-0	Cognitive Psychology
1 course for the Language and Culture cluster from:	
ANTHRO 215-0	The Study of Culture through Language
LING 220-0	Language and Society
LING 221-0	Language and Prejudice
LING 222-0	Language, Politics, and Identity <small>Crosslisted with SLAVIC 222</small>
LING 223-0	Language & Gender <small>Crosslisted with GNDR_ST 234</small>
LRN_SCI 351-0	Topics in Learning Sciences (Multimodal Storytelling on Migration for Learning Within and Across Communities)
SESP 351-0	Special Topics (Anthropology of Literacy)
TEACH_ED 309-0	Designing and Supporting Discourse-Rich Environments for Learning
1 course for the Learning in Schools cluster from:	
LRN_SCI/TEACH_ED 302-0	Social, Cultural, and Linguistic Contexts of Education
LRN_SCI 338-0	Learning and Teaching with Technology

Course	Title
1 course for the Out of School Learning cluster from:	
LRN_SCI/LOC 214-0 or LOC 214-BR	Culture and Cognition Culture and Cognition: SESP Leadership Institute
LRN_SCI 224-0	Holocaust Education Design
LRN_SCI 251-0	Special Topics in Learning Sciences (Intro to Learning Sciences)
LRN_SCI/LOC 308-0	Redesigning Everyday Organizations
LRN_SCI 351-0	Topics in Learning Sciences (Computing, Ethics, and Society )
LRN_SCI 351-0	Topics in Learning Sciences (Text Mining for Education, Organizations and Social Science Research)
LOC 351-0	Topics in Learning and Organizational Change (Cognition in Contexts)
SESP 251-0	Special Topics (Finding Your Path: Future Possibilities and Social Change)
SESP 323-0	Trauma and Atrocity, Holocaust Memory, Memorial and Museums
SESP 360-0	Magic Monsters & the Holocaust
TEACH_ED 329-0	Cognition and Culture in Teaching and Learning
1 course for the Design of Learning Environments cluster from:	
SESP 260-0	Community Based Research Methodologies: Educational Justice
LRN_SCI 224-0	Holocaust Education Design
LRN_SCI 309-0	Inclusive Making
LRN_SCI 313-0	Tangible Interaction Design and Learning
LRN_SCI 326-0	Design of Technological Tools for Thinking and Learning
LRN_SCI 351-0	Topics in Learning Sciences (Sports, Technology and Learning or Transformative Computer Science Education)
LRN_SCI 372-0	Designing and Constructing Models with Multi-agent Languages
TEACH_ED 309-0	Designing and Supporting Discourse-Rich Environments for Learning
TEACH_ED 336-0	Instructional Design & Assessment
SESP 195-1	Civic Engagement 1- Participatory Policymaking
SESP 195-2	Civic Engagement 2: Participatory Budgeting
SESP 195-3	Civic Engagement 3: Organizing, Gathering & Policy implementation
1 additional course in student's specialization	
<b>Concentration Extension Course (7 units)</b>	
Must be selected from an approved list of courses in learning sciences, other SESP concentrations, and disciplines such as anthropology, communication studies, computer science, design, linguistics, and psychology. Must include at least 3 courses at the 300 level. Up to 3 units of SESP 390-0 Research Apprenticeship or SESP 399-0 Independent Study and 3 units of SESP 398-0 Honors Thesis may be counted toward this requirement.	
<b>SESP Core (8 units)</b>	
Course	Title
Seminar—1 unit	
SESP 200-0	Understanding Knowledge

**Human Development—1 unit**

SESP 201-0 or PSYCH 244-0	Human Development: Childhood and Adolescence <sup>1</sup> Developmental Psychology
OR	
SESP 203-0	Human Development: Adulthood and Aging
OR	
HDC 310-0	The Art and Science of Aging
OR	
SESP 251-0	Special Topics (Coming of Age and Growing Old in the 21st Century)
OR	
HDC 351-0	Special Topics in Human Development in Context (Myths and Facts of Adolescence )

**Methodologies —2 units**

SESP 210-0 or STAT 202-0 or STAT 210-0 or PSYCH 201-0 or SOCIOl 303-0	Introduction to Statistics and Research Methodology Introduction to Statistics and Data Science Introduction to Probability and Statistics Statistical Methods in Psychology Analysis and Interpretation of Social Data
SESP 272-0	Field Research Methods

**Experiential Learning—4 units<sup>2</sup>**

SESP 392-0 or SESP 392-SA	Experiential Learning: Practicum Experiential Learning: Practicum Study Abroad
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<sup>1</sup> PSYCH 110-0 Introduction to Psychology is a prerequisite for PSYCH 244-0 and PSYCH 201-0.

<sup>2</sup> This 4-unit course may be taken either for 1 quarter during junior year or for nine weeks during the Summer Session before or after junior year; no fifth unit may be taken concurrently without special permission. At least 2 quarters before registering for the course, students must consult the SESP practicum director regarding procedures and site-placement application materials. For Summer Session practicums, consultation should be scheduled at least 3 quarters in advance.

## Overlay Requirements\*

\* Overlay requirements are fulfilled by courses taken for the concentration

Course	Title
<b>Global Engagement</b>	
1 quarter of study abroad or 3 quarters of foreign language or equivalent.	
<b>Heterogeneities, Systems, and Inequalities</b>	
1 course counted towards the concentration: HDC 305-0, LOC 214-0, LOC 214-BR, LOC 351-0 (Identities, Intersection, and Organizations or Global Organizations & Leadership), LRN_SCI 202-0, LRN_SCI 214-0, LRN_SCI 224, LRN_SCI 302-0, LRN_SCI 309-0, LRN_SCI 351-0 (Identity, Power, and the Historical Imaginary Across Social Contexts), SESP 195-0, SESP 251-0 (Finding Your Path: Future Possibilities and Social Change), SESP 260-0, SESP 323-0, LRN_SCI 351-0 (Computing, Ethics, and Society), SESP 351-0 (Anthropology of Literacy or Anthropology of Education), SESP 360-0, SOC_POL 313-0, SOC_POL 315-0, SOC_POL 331-0, SOC_POL 333-0, SOC_POL 351-0 (Intersectionality, Measurement, and Public Policy or Religion and Policy or Social Side of College), TEACH_ED 301-0, TEACH_ED 302-0, TEACH_ED 329-0	
<b>Methods in Context</b>	

1 course counted towards the concentration: HDC 330-0, HDC 347-0, LOC 308-0, LOC 311-0, LOC 313-0, LOC 347-0, LRN\_SCI 224-0, LRN\_SCI 301-0, LRN\_SCI 309-0, LRN\_SCI 313-0, LRN\_SCI 326-0, LRN\_SCI 351-0 (Sports, Technology and Learning or Text Mining for Education, Organizations, and Social Science Research or Transforming Computer Science Education or Indigenous Methods in Research), LRN\_SCI 372-0, SESP 251-0 (Intro to Social Science Research), SESP 260-0, SESP 310-0, SESP 323-0, SESP 360-0, SOC\_POL 330-0, SOC\_POL 331-0, SOC\_POL 332-0, SOC\_POL 333-0, SOC\_POL 334-0, SOC\_POL 351-0 (Social Side of College or Intersectionality, Measurement, and Public Policy)

## Foundational Disciplines (10 units)

- 2 natural sciences (NS) courses
- 2 empirical and deductive reasoning (EDR) courses
- 2 historical studies (HS) courses
- 2 ethical and evaluative thinking (EET) courses
- 2 literature and arts (LA) courses

Selected courses from Weinberg College and professional schools across the University may be used to fulfill distribution requirements with the consent of the student's adviser and the SESP assistant dean for student affairs.

## Electives (8 units)

Courses from any school across the University may be used to fulfill elective requirements. Students are encouraged to discuss their elective plans with their advisers; they may be able to pursue a second major or a minor using elective credits.

## Secondary Teaching

[sesp.northwestern.edu/ugrad/secondary-teaching](http://sesp.northwestern.edu/ugrad/secondary-teaching)

SESP's interdisciplinary secondary teaching concentration combines subject-area courses in a chosen field from Weinberg College—biological sciences, chemistry, economics, English, history, mathematics, physics, political science, or Spanish—with teacher education courses like child and adolescent development, and education theory and methods. The program leads to an Illinois Professional Educator license as well as a bachelor of science in education and social policy degree upon completion of licensure and degree requirements. The degree is 42 units.

Similar to the other SESP concentrations, which have a four unit practicum in the third year, secondary teaching students must complete a four unit student teaching internship in the last year while enrolled in TEACH\_ED 388-0 Student Teaching in Multilingual & Multicultural Contexts: Secondary Humanities or TEACH\_ED 385-0 Student Teaching in Multilingual and Multicultural Contexts: Secondary Math or TEACH\_ED 386-0 Student Teaching in Multilingual and Multicultural Contexts: Secondary Science.

Northwestern undergraduates in schools other than SESP (i.e. Weinberg College of Arts and Sciences, School of Communication, etc.) have the option to complete requirements for teacher licensure eligibility while staying in their home school.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**Total requirements—42 units**

**Foundational discipline requirements—10 units**

**Professional core**—12 units

**Teaching subject-area requirements**—varies

**Electives**—8 or fewer as needed to complete the 42-unit degree requirement

## Foundational Discipline Requirements (10 units)

- 2 natural sciences courses
- 2 empirical and deductive reasoning courses
- 2 historical studies courses
- 2 ethical and evaluative thinking courses (TEACH\_ED 302-0 Social, Cultural, and Linguistic Contexts of Education will count as 1 of these)
- 2 literature and arts courses

Selected courses from Weinberg College and professional schools across the University fulfill distribution requirements.

## Professional Core (12 units)

Course	Title
SESP 201-0	Human Development: Childhood and Adolescence <sup>1,2</sup>
TEACH_ED 302-0	Social, Cultural, and Linguistic Contexts of Education
TEACH_ED 310-0	Foundations of Learning in a New Language
TEACH_ED 322-0	Linguistics Informed Approaches to Literacy
TEACH_ED 327-0	Educating Exceptional Children
1 methods and techniques course chosen from:	
TEACH_ED 355-0	Methods & Techniques: World Languages
TEACH_ED 356-0	Methods & Techniques: English
TEACH_ED 357-0	Methods and Techniques: Secondary Mathematics
TEACH_ED 358-0	Methods and Techniques: Science
TEACH_ED 359-0	Methods & Techniques: Social Science
1 middle grades methods course chosen from:	
TEACH_ED 328-0	Dynamics of Middle School Curriculum
TEACH_ED 366-0	Middle Grades Methods & Techniques of Teaching: English
TEACH_ED 367-0	Middle Grades Methods & Techniques of Teaching: Mathematics
TEACH_ED 368-0	Middle Grades Methods & Techniques of Teaching: Science
TEACH_ED 369-0	Middle Grades Methods & Techniques of Teaching: Social Sciences
1 practicum/seminar:	
TEACH_ED 378-0	Theory & Practice of Tchg in Multiling. & Multicult. Contexts: Sec. Humanities
or TEACH_ED 375-0	Theory & Practice of Tchg in Multiling. & Multicult. Contexts: Secondary Math
or TEACH_ED 376-0	Theory & Practice of Tchg in Multiling. & Multicult. Contexts: Secondary Science
1 student teaching seminar (4 units):	
TEACH_ED 388-0	Student Teaching in Multilingual & Multicultural Contexts: Secondary Humanities
or TEACH_ED 385-0	Student Teaching in Multilingual and Multicultural Contexts: Secondary Math
or TEACH_ED 386-0	Student Teaching in Multilingual and Multicultural Contexts: Secondary Science

<sup>1</sup> PSYCH 244-0 Developmental Psychology for non-SESP students

<sup>2</sup> PSYCH 110 is a prerequisite for PSYCH 244-0.

## Teaching Subject-Area Requirements (12–20.72 units)

Specific teaching subject-area courses prepare students to meet the requirements of the Illinois State Board of Education. Teaching subject-area requirements may differ from those of a departmental major, and departmental course offerings change frequently. Secondary teaching candidates must meet regularly with the secondary teaching adviser to ensure that requirements are met. In the event that courses listed here are no longer offered by the departments, suitable replacements will be found. Students are also responsible for any prerequisites. The unit totals below are approximate minimums. Exact unit totals depend on options chosen.

### Biological and Physical Sciences

#### Biological Sciences (20.06 units)

Course	Title
6 core science courses plus labs:	
BIOL_SCI 201-0	Molecular Biology
CHEM 110-0 & CHEM 131-0 & CHEM 141-0	Quantitative Problem Solving in Chemistry and Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I
OR	
CHEM 151-0 & CHEM 161-0	General Chemistry I and General Chemistry Laboratory I
OR	
CHEM 171-0 & CHEM 181-0	Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
ENVR_SCI 202-0	The Health of the Biosphere
PHYSICS 130-1 & PHYSICS 130-2 & PHYSICS 130-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3 or PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	College Physics and College Physics and College Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory General Physics and General Physics and General Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
ASTRON 101-0 or ASTRON 120-0	Modern Cosmology Highlights of Astronomy
EARTH 201-0 or ENVR_SCI 201-0	Earth Systems Revealed Earth: A Habitable Planet
TEACH_ED 333-0	Science Content for Teachers
3 additional chemistry courses and required labs:	
CHEM 132-0 & CHEM 142-0	Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II
OR	
CHEM 152-0 & CHEM 162-0	General Chemistry II and General Chemistry Laboratory II
OR	
CHEM 172-0 & CHEM 182-0	Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory

CHEM 215-1 & CHEM 235-1 or CHEM 217-1 & CHEM 237-1	Organic Chemistry I and Organic Chemistry Lab I Accelerated Organic Chemistry I and Accelerated Organic Chemistry Laboratory I	TEACH_ED 333-0 6 additional chemistry courses and required labs:	Science Content for Teachers
CHEM 215-2 & CHEM 235-2 or CHEM 217-2 & CHEM 237-2	Organic Chemistry II and Organic Chemistry Lab II Accelerated Organic Chemistry II and Accelerated Organic Chemistry Laboratory II	CHEM 132-0 & CHEM 142-0 or CHEM 152-0 & CHEM 162-0 OR	Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II General Chemistry II and General Chemistry Laboratory II
5 additional biological sciences courses plus 3 labs:		CHEM 172-0 & CHEM 182-0	Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory
BIOL_SCI 202-0	Cell Biology	CHEM 220-0	Introductory Instrumental Analysis
BIOL_SCI 203-0	Genetics and Evolution	CHEM 215-1 & CHEM 235-1 or CHEM 217-1 & CHEM 237-1	Organic Chemistry I and Organic Chemistry Lab I Accelerated Organic Chemistry I and Accelerated Organic Chemistry Laboratory I
BIOL_SCI 301-0	Principles of Biochemistry	CHEM 215-2 & CHEM 235-2 or CHEM 217-2 & CHEM 237-2	Organic Chemistry II and Organic Chemistry Lab II Accelerated Organic Chemistry II and Accelerated Organic Chemistry Laboratory II
1 additional 300-level genetics or evolution course chosen from but not limited to:		CHEM 215-3 & CHEM 235-3 or CHEM 217-3 & CHEM 235-3	Organic Chemistry III and Organic Chemistry Lab III Accelerated Organic Chemistry III and Organic Chemistry Lab III
BIOL_SCI 341-0	Population Genetics	CHEM 393-0	Green Chemistry
BIOL_SCI 342-0	Evolutionary Processes		2 additional 300-level chemistry courses
BIOL_SCI 392-0	Morphogenesis		
BIOL_SCI 393-0	Human Genomics		
BIOL_SCI 395-0	Molecular Genetics		
BIOL_SCI 396-0	Evolution and Diversity: Mushroom Genetics and Genomics		
1 additional 300-level biological sciences course (SESP students) <sup>1</sup>			
3 labs:			
BIOL_SCI 232-0	Molecular and Cellular Processes Laboratory		
BIOL_SCI 233-0	Genetics and Molecular Processes Laboratory		
BIOL_SCI 234-0	Investigative Laboratory		

<sup>1</sup> For Weinberg College students: additional courses as needed to meet requirements for the major.

## Chemistry (20.72 units)

Course	Title
7 core science courses plus labs:	
PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	General Physics and General Physics and General Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
ENVR_SCI 202-0	The Health of the Biosphere
BIOL_SCI 164-0	Basic Genetics and Evolution
OR	
BIOL_SCI 201-0 & BIOL_SCI 202-0 & BIOL_SCI 232-0	Molecular Biology and Cell Biology and Molecular and Cellular Processes Laboratory
CHEM 110-0 & CHEM 131-0 & CHEM 141-0	Quantitative Problem Solving in Chemistry and Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I
OR	
CHEM 151-0 & CHEM 161-0	General Chemistry I and General Chemistry Laboratory I
OR	
CHEM 171-0 & CHEM 181-0	Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
2 courses from Earth and Planetary Sciences (1 Earth and 1 Planetary):	
ASTRON 101-0 or ASTRON 120-0	Modern Cosmology Highlights of Astronomy
EARTH 201-0 or ENVR_SCI 201-0	Earth Systems Revealed Earth: A Habitable Planet

## Physics (14.36 units)

Course	Title
5 core science courses plus labs:	
BIOL_SCI 103-0	Diversity of Life
CHEM 110-0 & CHEM 131-0 & CHEM 141-0 or CHEM 171-0 & CHEM 181-0	Quantitative Problem Solving in Chemistry and Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
or	
CHEM 151-0 & CHEM 161-0	General Chemistry I and General Chemistry Laboratory I
PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	General Physics and General Physics and General Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
2 courses from Earth and Planetary Sciences (1 Earth and 1 Planetary)	
ASTRON 101-0 or ASTRON 120-0	Modern Cosmology Highlights of Astronomy
EARTH 201-0	Earth Systems Revealed
TEACH_ED 333-0	Science Content for Teachers
6 additional physics courses:	
PHYSICS 239-0	Foundations of Modern Physics
PHYSICS 330-1	Classical Mech
PHYSICS 332-0	Statistical Mechanics
PHYSICS 333-1	Advanced Electricity & Magnetism
2 additional physics courses including at least 1 at the 300 level	

## English

### English (13 units)

Course	Title
ENGLISH 210-1 & ENGLISH 210-2 or ENGLISH 270-1 & ENGLISH 270-2	British Literary Traditions and British Literary Traditions American Literary Traditions and American Literary Traditions
ENGLISH 300-0	Seminar in Reading and Interpretation
TEACH_ED 324-0	Critical Issues in Literacy
9 additional courses, including at least 4 at the 300 level:	
At least 3 world literature courses chosen from but not limited to:	
COMP_LIT 201-0	Reading World Literature
COMP_LIT 202-0	Interpreting Culture
COMP_LIT 270-0	Literatures in Translation
COMP_LIT 301-0	Studies in World Literature
COMP_LIT 303-0	Movements and Periods
ENGLISH 365-0	Studies in Postcolonial Literature
ENGLISH 369-0	Studies in African Literature
ENGLISH 369-CN	Studies in African Literature
At least 3 literature courses representing different genders, ethnicities and social classes chosen from but not limited to:	
ENGLISH 274-0	Introduction to Native American and Indigenous Literatures
ENGLISH 275-0	Introduction to Asian American Literature
ENGLISH 277-0	Introduction to Latinx Literature
ENGLISH 366-0	Studies in African American Literature
ENGLISH 374-0	Studies in Native American and Indigenous Literatures
ENGLISH 375-0	Studies in Asian American Literature
ENGLISH 377-0	Topics in Latinx Literature
COMP_LIT 205-0	Reading Difference
COMP_LIT 306-0	Studies in Race & Ethnicity
COMP_LIT 307-0	Studies in Gender, Sexuality & Representation
3 additional courses chosen from the following:	
COMP_LIT 305-0	Studies in Film, Media, and Visual Culture
ENGLISH 206-0	Reading & Writing Poetry
ENGLISH 207-0	Reading and Writing Fiction
ENGLISH 208-0	Reading & Writing Creative Non-Fiction
ENGLISH 308-0	Advanced Creative Nonfiction Writing
ENGLISH 386-0	Studies in Literature and Film
JOUR 201-1	Fundamentals of Reporting & Writing News
JOUR 201-2	Fundamentals of Video Journalism
JOUR 291-0	Intro to Podcasting
RTVF 190-0	Media Construction
RTVF 220-0	Analyzing Media Texts

## Spanish

### Spanish (12 units)

Course	Title
Students must earn a score of upper-intermediate or higher on the ACTFL OPI for licensure.	
12 Spanish language, literature, and culture and civilization courses, including at least 5 at the 300 level:	
3 courses chosen from but not limited to:	
SPANISH 200-0	Advanced Spanish for Heritage Language Learners
SPANISH 201-0	Advanced Spanish I: Contemporary Latin America
SPANISH 202-0	Conversation on Current Topics

Course	Title
SPANISH 204-0	Advanced Spanish II: Activism in Times of Political Change
SPANISH 208-0	Spanish and the Community
2 courses chosen from but not limited to:	
SPANISH 250-0	Literature in Spain before 1700
SPANISH 251-0	Literature in Spain since 1700
SPANISH 260-0	Literature in Latin America before 1888
SPANISH 261-0	Literature in Latin America since 1888
3 literature courses with at least 2 focusing on Latin-American literature selected from the following but not limited to:	
SPANISH 231-0	The "New" Latin American Narrative (Taught in English)
SPANISH 232-0	Discovering Jewish Latin America
SPANISH 277-0	Introduction to Latinx Literature
SPANISH 223-0	Cervantes (Taught in English)
SPANISH 323-0	Cervantes' Don Quixote
SPANISH 332-0	Avant-Garde Writers and Experimental Fiction in Spain
SPANISH 340-0	Colonial Latin American Literature
SPANISH 341-0	Latin American Modernismo
SPANISH 343-0	Latin American Avant-Gardes
SPANISH 344-0	Borges
SPANISH 345-0	Reading the 'Boom'
SPANISH 346-0	Testimonial Narrative in Latin America
SPANISH 347-0	Literature and Revolution in Latin America
SPANISH 348-0	Readings in Latin American Short Fiction
3 Latin American/Latin-x culture and civilization courses including film, art, and history, from, but not limited to:	
SPANISH 350-0	Visual Culture in Latina/o America and Spain
SPANISH 361-0	Latin America: Studies in Culture and Society
SPANISH 362-0	Citizenship and Urban Violence in Latin America
SPANISH 363-0	Topics in US Latina/o Literary and Cultural Studies
SPANISH 364-0	Cultural Borders/Border Cultures
SPANISH 380-0	Topics in Film in Latin America and/or Spain
SPANISH 395-0	Topics in Latin American, Latina and Latino, and/or Iberian Cultures
Choose 1 from the following:	
SPANISH 280-0	Introduction to Spanish Linguistics
SPANISH 281-0	Spanish Phonetics and Phonology
SPANISH 302-0	Advanced Grammar

## Mathematics

### Mathematics (12 units)

Course	Title
12 courses (total number of courses may depend on the calculus sequence the student enrolls in) with at least 5 at the 300 level. No more than two AP credits may be counted toward the 12.	
Foundation calculus courses:	
MATH 218-1 & MATH 218-2 & MATH 218-3 or MATH 220-1 & MATH 220-2	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus Single-Variable Differential Calculus and Single-Variable Integral Calculus
MATH 226-0	Sequences and Series
MATH 230-1	Multivariable Differential Calculus
MATH 230-2	Multivariable Integral Calculus
Additional required courses:	
MATH 240-0	Linear Algebra
MATH 306-0	Combinatorics & Discrete Mathematics

1 probability and statistics course chosen from:	
MATH 310-1	Probability and Stochastic Processes
SESP 210-0	Introduction to Statistics and Research Methodology
STAT 210-0	Introduction to Probability and Statistics
TEACH_ED 373-0	Topics in High School Math
TEACH_ED 319-0	Teaching Math: Statistics and Probability

1 geometry course chosen from:	
MATH 340-0	Geometry
TEACH_ED 318-0	Teaching Math: Geometry

Additional courses as needed to reach minimum 12 units

## Social Sciences

### History (14 units)

Course	Title
No more than 1 AP credit may be counted towards history course requirements.	
HISTORY 250-1 & HISTORY 250-2 or HISTORY 201-1 & HISTORY 201-2	Global History: Early Modern to Modern Transition and Global History: The Modern World
HISTORY 210-1 & HISTORY 210-2	Europe in the Medieval and Early Modern World and Europe in the Modern World
HISTORY 210-1 & HISTORY 210-2	North America and the United States to 1865 and History of the United States, Reconstruction to the Present
HISTORY 393-0	Approaches to History
5 additional courses, including at least 4 at the 300 level:	
2 non-Western civilization courses such as:	
HISTORY 255-1 & HISTORY 255-2 & HISTORY 255-3	African Civilizations and Africa in the Age of Early Modern Empires and Modern Africa
HISTORY 270-0	Middle Eastern/Islamic Civilization
HISTORY 281-0	Chinese Civilization
HISTORY 284-1 & HISTORY 284-2	Ancient and Medieval Japan: From the Realm of the Gods to the Age of the Samurai and Early Modern Japan
HISTORY 356-1 & HISTORY 356-2	History of South Africa, Early Times to 1879 and History of South Africa, 1879-on
HISTORY 357-0	East Africa
HISTORY 358-0	Topics in West African History
HISTORY 366-0	Latin America in the Independence Era: American Indians and Nations
HISTORY 368-2	Revolutions in Latin America and the Caribbean from Haiti to Mexico
HISTORY 369-0	Development and Inequality in Modern Latin America
HISTORY 381-1 & HISTORY 381-2	Qing China and Modern China: The Twentieth Century
HISTORY 382-0	The Modern Japanese City
HISTORY 384-1 & HISTORY 384-2	History of Modern Japan: The Modern State, 1860-1943 and History of Modern Japan: War and postwar Japan, 1943-present
HISTORY 385-1	History of Modern South Asia, 1500-1800
3 additional history courses with at least 2 in US History	
4 courses to meet related core requirements in social sciences; no more than 1 may be met by AP credit:	

POLI_SCI 220-0	American Government and Politics
ECON 201-0	Introduction to Macroeconomics

Plus 2 from the following:	
TEACH_ED 334-0	Social Science Content for Teachers
ECON 202-0	Introduction to Microeconomics

POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 250-0	Introduction to Comparative Politics

### Economics (15 units)

Course	Title
8 economics courses:	
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics
ECON 281-0	Introduction to Applied Econometrics
ECON 310-1	Microeconomics
ECON 310-2	Microeconomics
or ECON 311-0	Macroeconomics
3 additional economics courses at the 300 level	

6 history courses including four in U.S. history
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1 related core chosen from the list:	
TEACH_ED 334-0	Social Science Content for Teachers
POLI_SCI 220-0	American Government and Politics
POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 250-0	Introduction to Comparative Politics

### Political Science (15 units)

Course	Title
8 political science courses of which 5 must be at the 300 level:	
Choose at least 2 from:	
POLI_SCI 201-0	Introduction to Political Theory
POLI_SCI 220-0	American Government and Politics
POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 250-0	Introduction to Comparative Politics
POLI_SCI 321-0	Urban Politics
1 course in methodology chosen from:	
POLI_SCI 210-0	Introduction to Empirical Methods in Political Science
POLI_SCI 310-0	Methods of Political Inference
POLI_SCI 312-0	Statistical Research Methods

5 additional political science courses with at least two focusing on a region outside of North America
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6 history courses with four in U.S. history	
1 related core course chosen from the following:	
TEACH_ED 334-0	Social Science Content for Teachers
ECON 201-0	Introduction to Macroeconomics

### Electives (varies)

Additional units of elective coursework must be taken to complete the 42-unit degree requirement. Students are encouraged to discuss their elective plans with the teacher certification manager.

## English as a Second Language (ESL) and Bilingual Education Endorsements (optional)

- Most requirements for these endorsements are met through other course work in this degree. To complete the endorsements students are encouraged to take the following courses:

Course	Title
TEACH_ED 320-0	Designing for Linguistically and Culturally Sustaining Instruction
TEACH_ED 332-0	Assessment of Linguistically Diverse Students

or MS_ED 432-1 & MS_ED 432-2	Assessment of Linguistically Diverse Students I and Assessment of Linguistically Diverse Students II
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## Teacher Education Program

Students who wish to be licensed as teachers must apply to the SESP Teacher Education Program. Secondary Teaching within the program is approved by the Illinois State Board of Education. Completion of the courses alone does not result in licensure, nor is licensure required for completion of the SESP degree.

### Application and Admission

Students completing a teacher licensure pathway as an undergraduate apply to the Teacher Education Program by the fall of their third year. To be admitted, candidates must have a minimum overall GPA of 2.5 and a minimum GPA of 3.0 in a humanities teaching subject-area or meet an annually calculated and determined GPA in math or science subject-areas. Additional admissions requirements include a letter of recommendation and a response to a selected essay prompt.

### Clinical Experience

Students in the Teacher Education Program complete two clinical experiences: a school practicum (typically during fall of the last year); and student teaching (typically during winter of the last year).

To be eligible for the clinical experiences, students must have met the GPA requirements for and been admitted to the Teacher Education Program. Students need to be on track to have completed a minimum of 9 courses in the teaching subject area by the end of the practicum term for field-site placement with a department or teacher mentor at a local school. Additionally, students must be available to begin the practicum at the start of the field-site placement's academic school year. Please note that the students' practicum/student teaching field-site placement can be postponed, stopped or withdrawn due to concerns over their health or academic or professional performance. Adjustments to the timing of a clinical experience may be made on an individual case-by-case basis based on determined need; for example; those with an athletics scheduling conflict.

Clinical experiences gained at the field-site are central to the discussion of methods and theories in the practicum seminar (TEACH\_ED 378-0 or TEACH\_ED 375-0 or TEACH\_ED 376-0) and methodology courses (TEACH\_ED 355-0–TEACH\_ED 359-0).

To be eligible for student teaching, students must have successfully completed the applicable TEACH\_ED 355-0–TEACH\_ED 359-0 course(s) as well as TEACH\_ED 378-0 or TEACH\_ED 375-0 or TEACH\_ED 376-0, earned a passing score on the applicable ILTS Content-Area Test, fulfilled minimum GPA requirements for student teaching, completed 9 teaching subject-area courses and have been recommended for continuation to student teaching. Most school districts also require a criminal background check.

Student teaching involves full-time placement in a local school for the entire quarter. Teacher candidates attend an evening seminar (TEACH\_ED 385-0, TEACH\_ED 386-0 or TEACH\_ED 388-0). The internship and seminar together earn 4 units. No other courses are taken concurrently. Teacher candidates are evaluated by their school mentor, a Northwestern supervisor, and the seminar instructor.

### Other Licensure Requirements

In addition to successful completion of the clinical experiences, all teacher candidates must successfully complete the Teacher

Performance Assessment, or equivalent as required by the Illinois State Board of Education, at the end of the practicum.

World language teacher candidates are required to complete the Oral Proficiency Interview of the ACTFL with a rating of upper-intermediate-high or better.

### Recommendation for Licensure

Students are recommended for licensure when they successfully complete degree requirements, earn a rating of recommendation for licensure for practicum/student teaching and pass all outside tests as noted above. Although legal requirements for licensure vary from state to state, the SESP Teacher Education Program is flexible enough to permit students who plan carefully to complete provisional requirements for most states. As it is easier to obtain a teaching license in another state through reciprocity than through independent certification, all students who complete the program and are eligible are encouraged to apply for an Illinois license before leaving the state.

Students should apply for the license immediately upon graduation. Teacher Education Program graduates who are recommended, but do not apply for certification upon graduation may not be eligible for certification at a later date due to changes in state requirements.

The Illinois School Code has provided that school districts may not knowingly employ individuals who have been convicted of certain offenses (principally those related to sexual misconduct or drugs). Illinois school districts require applicants to submit to a criminal background check.

**TEACH\_ED 301-0 Schooling in America (1 Unit)** This course will explore the development of schools in the United States by understanding the ideologies and decisions (pedagogical and political) that have shaped schools over 200 years.

**TEACH\_ED 302-0 Social, Cultural, and Linguistic Contexts of Education (1 Unit)** This course is designed to explore how the ways that we live culturally provide strengths for teaching, learning and design. The course draws from the interdisciplinary study of socio-cultural, linguistic, and contextual influences of education, as well as perspectives from learning, teaching, research and policy. Candidates will examine how issues of power and privilege as they pertain to race, ethnicity, language, class, gender, sexuality and identity politics shape and are shaped within our education system. Candidates will be asked to consider their own schooling experiences, and deeply evaluate their beliefs, thoughts and assumptions about the influence of various legal, historical, socio-cultural and linguistic factors on their ideas about teaching, learning, and schooling. Special attention will be given to the major trends that influence contemporary landscapes of PK-12 education and the potential systemic benefits and harms associated with them. Candidates will produce an autoethnography that considers the impact of personal formal and informal learning experiences rooted in racial, cultural and linguistic identity on their life view, as well as how they move through the world as advocates for justice.

**TEACH\_ED 309-0 Designing and Supporting Discourse-Rich Environments for Learning (1 Unit)** Across the K-12 curriculum, approaches to teaching and learning that focus on student sensemaking and meaningful learning rely on creating a classroom where much of this sensemaking work occurs through talk. Supporting productive classroom discourse is a key element in engaging students in meaningful knowledge-building work. Teachers need tools and strategies to create and support an environment in which students feel welcome and responsible for contributing by sharing their ideas, building on one

another's thinking, and working together to further their learning as a community. This course address how to support discourse in the classroom, including designing discussion-based tasks, supporting students in academic discourse, creating a classroom climate supportive of discussion, questioning strategies and talk moves that facilitate discussion, and assessment in discussion-based tasks. We will examine current approaches to supporting effective classroom discussions drawn from elementary, middle school, and high school classrooms, and across multiple disciplines including math, literacy, history, science, and others. Work in the course will involve discussing articles sharing discourse strategies and analyzing video of classroom interactions to see these approaches in action. Students will have the opportunity to work with the tools and strategies of the course in analyzing a classroom discussion they choose to observe, designing discussion-based lessons for their own teaching context, and to try out these tools in facilitating discussions with their peers.

**TEACH\_ED 310-0 Foundations of Learning in a New Language (1 Unit)**  
Historical, political, sociocultural, and educational practices that impact linguistically and culturally diverse learners in American schools.

**TEACH\_ED 311-0 Elementary Science Methods and Content (1 Unit)**  
This is Part I of a two-part combined Elementary Science and Social Studies Methods course sequence. This course prepares preservice teachers to teach science and social studies in the elementary grades. Inquiry is a grounding principle that will be explored in the context of both science and social studies planning. Candidates will examine interdisciplinary planning and shared pedagogy, and methodologies for both science and social studies. Some class sessions, readings, or experiences will focus on either science or social studies in contrast with some of the cross-curricular approaches. Science topics include the fundamental principles and interrelationships among various areas of science (life, physical, environmental, earth and space), science and engineering practices and investigation to solve problems, and how to engage students in acquiring new knowledge. The broad range of social science content will be addressed, including history, geography, culture, economics and citizenship, with connections to Illinois, the United States and the world. Candidates will work with and examine Next Generation Science Standards, Common Core Standards, and Illinois State Standards.

**TEACH\_ED 314-0 Math for Elementary Teachers (1 Unit)** Math for Elementary Teachers.

**TEACH\_ED 315-0 Elementary Social Studies Methods and Content (1 Unit)** This is Part II of a two-part combined Elementary Science and Social Studies Methods course sequence. Candidates will continue their work and study from Part I. This course prepares preservice teachers to teach science and social studies in the elementary grades. Inquiry is a grounding principle that will be explored in the context of both science and social studies planning. Candidates will examine interdisciplinary planning and shared pedagogy, and methodologies for both science and social studies. Some class sessions, readings, or experiences will focus on either science or social studies in contrast with some of the cross-curricular approaches. Science topics include the fundamental principles and interrelationships among various areas of science (life, physical, environmental, earth and space), science and engineering practices and investigation to solve problems, and how to engage students in acquiring new knowledge. The broad range of social science content will be addressed, including history, geography, culture, economics and citizenship, with connections to Illinois, the United States and the world. Candidates will work with and examine Next Generation Science Standards, Common Core Standards, and Illinois State Standards. Prereq: completion of TEACH\_ED 311.

**TEACH\_ED 318-0 Teaching Math: Geometry (1 Unit)** The course is intended to deepen conceptual understanding of middle school and high school geometry topics, especially as related to attributes and relationships of geometric objects.

**TEACH\_ED 319-0 Teaching Math: Statistics and Probability (1 Unit)** This course aims to effectively prepare teachers to help middle school and high school students "learn with understanding" the fundamentally important statistics and probability concepts and skills that are needed for today's world and that are articulated in the Common Core State Standards.

**TEACH\_ED 320-0 Designing for Linguistically and Culturally Sustaining Instruction (1 Unit)** The Designing for Culturally and Linguistically Sustaining Teaching course engages pre-service candidates in developing equitable and sustaining planning and instructional techniques reflective of the lives, languages, literacies, and cultural ways of being that represent the children they will teach. Through exploring diverse heterogeneous instructional practices, this course delves into understanding strategies and ways of thinking about content that transform the daily instructional experiences we can offer our students, making connections a reality.

**TEACH\_ED 322-0 Linguistics Informed Approaches to Literacy (1 Unit)** The Linguistics Informed Approaches to Literacy course supports students in analyzing the aims of linguistic science as well as how linguistic concepts apply to teaching in a variety of settings (including with multilingual students, monolingual students, and bilingual classrooms). Students will think about the complexities of language and how they connect with identity, culture, power, and schooling. Students explore topics like syntax, phonology, morphology, semantics, and cognates as they develop their own metalinguistic awareness in support of facilitating effective teaching and learning. A focal area will be supporting the development of students' literacies. Content-area reading topics include but are not limited to pre-reading, post-reading, vocabulary, fluency, and comprehension.

**TEACH\_ED 323-0 Elementary Literacy Methods & Content (1 Unit)** In the course participants will gain an understanding of the cognitive foundations of reading comprehension and their influence on methods of instruction and assessment, as well as the interrelationships between reading processes and language learning.

**TEACH\_ED 324-0 Critical Issues in Literacy (1 Unit)** Continues on the work in MS\_ED 422-0 and TEACH\_ED 322-0, delving deeply into critical literacy issues.

**TEACH\_ED 326-0 Elementary Math: Methods and Content (1 Unit)** The course provides an overview of mathematical topics taught in elementary and middle school. Course participants learn in small groups and reflect on their own and children's learning. Pedagogical contexts for the mathematical concepts are provided.

**TEACH\_ED 327-0 Educating Exceptional Children (1 Unit)** Students with disabilities, including learning disabilities resulting from human development and/or accidents; understanding and application of approved emergency, educational, and rehabilitative activities; interrelationships with medical, health, and educational personnel.

**TEACH\_ED 328-0 Dynamics of Middle School Curriculum (1 Unit)** Identifying and understanding the effects of middle school dynamics (principles, structures, and practices) on classroom learning and instruction. Focuses on the development and social problems of fifth through eighth graders.

**TEACH\_ED 329-0 Cognition and Culture in Teaching and Learning (1 Unit)** This course is an exploration of the theoretical foundations of

research on culture and cognition and how to apply these ideas to views of learning and teaching in a variety of settings. Students enrolled in the course can still receive credit if LOC/LRN\_SCI 214 has already been taken. This course builds on topics from LRN\_SCI 301 with an emphasis on classroom environment.

**TEACH\_ED 332-0 Assessment of Linguistically Diverse Students (1 Unit)**

The Assessment of Linguistically Diverse Students course engages pre-service teacher candidates in learning about a variety of assessment approaches, (including but not limited to standardized, formative, diagnostic, performance-based, etc.) with special attention to how assessment of English-Language Learners has been conceptualized within American historical and contemporary sociopolitical and sociocultural contexts. Issues of legality, bias, non-discriminatory policies, and ethical considerations that must accompany decisions about standards and practices used in the assessment of culturally and linguistically diverse students will be explored. Candidates will be asked to examine policies facing educators of linguistically diverse learners over the last century, and articulate multiple perspectives associated with the issue drawing from course readings and outside research.

**TEACH\_ED 333-0 Science Content for Teachers (1 Unit)** This course utilizes a discussion format with a heavy emphasis on critical thinking and skills based activities. The inquiry/discussion approach will help us delve into the concepts of ecology & earth systems found on the Illinois Licensure Test.

**TEACH\_ED 334-0 Social Science Content for Teachers (1 Unit)** Students will explore ways to select social studies content that is both meaningful and empowering for their students by engaging with texts that critically examine various social studies topics.

**TEACH\_ED 336-0 Instructional Design & Assessment (1 Unit)** Students will gain an overview of various approaches to curriculum design and instructional models, and will investigate several kinds of assessments, including formative and summative, and how those assessments are linked to instructional design, teaching and learning. Opportunities will be given to practice grading, providing good feedback, and managing a class assessment system.

**TEACH\_ED 338-0 Computational Tools for Justice and Inquiry-Based Learning (1 Unit)** Theory and practice of designing school environments that integrate new technologies and media. Taught with LRN\_SCI 338-0; may not receive credit for both courses.

**TEACH\_ED 351-0 Special Topics in Teacher Education (1 Unit)** Advanced work on special topics.

**TEACH\_ED 355-0 Methods & Techniques: World Languages (1 Unit)**

Analysis of research, teaching methodologies, and literature related to the content area. Focuses on learning experiences, methods, and educational techniques appropriate for elementary, middle school, and high school students. Concurrent registration in TEACH\_ED 378-0 or TEACH\_ED 379-0 required.

**TEACH\_ED 356-0 Methods & Techniques: English (1 Unit)** Analysis of research, teaching methodologies, and literature related to the content area. Learning experiences, methods, and educational techniques appropriate for high school students.

**TEACH\_ED 357-0 Methods and Techniques: Secondary Mathematics (1 Unit)** See description for MS\_ED 456-0.

**TEACH\_ED 358-0 Methods and Techniques: Science (1 Unit)** See description for MS\_ED 456-0.

**TEACH\_ED 359-0 Methods & Techniques: Social Science (1 Unit)** See description for MS\_ED 456-0.

**TEACH\_ED 366-0 Middle Grades Methods & Techniques of Teaching: English (1 Unit)**

**TEACH\_ED 367-0 Middle Grades Methods & Techniques of Teaching: Mathematics (1 Unit)**

**TEACH\_ED 368-0 Middle Grades Methods & Techniques of Teaching: Science (1 Unit)**

**TEACH\_ED 369-0 Middle Grades Methods & Techniques of Teaching: Social Sciences (1 Unit)**

**TEACH\_ED 373-0 Topics in High School Math (1 Unit)** Content varies.

**TEACH\_ED 375-0 Theory & Practice of Tchg in Multiling. & Multicult.**

**Contexts: Secondary Math (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

**TEACH\_ED 376-0 Theory & Practice of Tchg in Multiling. & Multicult.**

**Contexts: Secondary Science (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

**TEACH\_ED 377-0 Theory & Practice of Teaching in Multiling. & Multicult.**

**Contexts: Elementary (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall

practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

#### **TEACH\_ED 378-0 Theory & Practice of Tchg in Multiling. & Multicult.**

**Contexts: Sec. Humanities (1 Unit)** The Theory & Practice of Teaching in Multilingual and Multicultural Contexts course is strategically designed to support teacher candidates in applying their theoretical understandings and knowledge as they engage in the practices of observing, planning, teaching, assessing learning, and reflecting in the context of their fall practicum school placement. Asset-based pedagogies are central to the course and teacher candidates will be engaged in a variety of experiences that help them learn about their students and school communities (including understanding students' linguistic repertoires). Teacher candidates will continue to develop their understandings of language acquisition, theories of learning, content knowledge development, and effective teaching, as they analyze and explore classroom instruction (through both professional noticing in classrooms and their own teaching). A variety of methods for teaching all students, including multilingual students, (both through ESL and bilingual lenses) will be explored as well as domain-specific methods. Teacher candidates will explore strategies for making content comprehensible for all learners (including language learners) while supporting students and their development in each of the modes of communication (interpersonal, presentational, and interpretive). This course prepares teacher candidates for the transition to full-time student teacher the following quarter.

#### **TEACH\_ED 381-0 BSED/BSJ Experiential Learning Community Workshop Series (0 Unit)**

In their second year, students choose 1 experiential education requirement – either the SESP Practicum, Student Teaching, or Medill Journalism Residency for 4 units of credit. The students participate in the Community Workshop Series during the year they complete their experiential education requirement.

#### **TEACH\_ED 385-0 Student Teaching in Multilingual and Multicultural Contexts: Secondary Math (4 Units)**

The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively

differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisite: TEACH\_ED 375-0.

**TEACH\_ED 386-0 Student Teaching in Multilingual and Multicultural Contexts: Secondary Science (4 Units)** The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisite: TEACH\_ED 376-0.

**TEACH\_ED 387-0 Student Teaching: Elementary (4 Units)** The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisites: TEACH\_ED 377-0.

#### **TEACH\_ED 388-0 Student Teaching in Multilingual & Multicultural Contexts: Secondary Humanities (4 Units)**

The Student Teaching Seminar supports teacher candidates in developing skills, practices, and understandings essential for successful professional educators, including the use of theoretical knowledge to inform professional practice and the cultivation of questions rooted in practice to illuminate the meaning of theory. Teacher candidates are guided in the development and implementation of instructional units and lessons that apply a variety of methods and approaches (including ones designed to support linguistically diverse students). Teacher candidates work together and with the support of mentors to consider the selection and evaluation of instructional materials and consider how they can be used, scaffolded, and adapted to meet the needs of students. Further, teacher candidates examine, adapt, and develop a range of classroom assessments to effectively measure content area learning as well as English language development. Based on assessment findings, teacher candidates plan logical next steps for students and consider how to effectively differentiate instruction. The course emphasizes teacher reflection in support of growth. Prerequisites: TEACH\_ED 378-0.

# Social Policy

[sesp.northwestern.edu/ugrad/social-policy](http://sesp.northwestern.edu/ugrad/social-policy)

The Social Policy concentration explores how policies function as the guiding principles on which social programs are based. Students interested in public service, public policy, public health, and law typically choose to follow the requirements of the social policy concentration.

Courses analyze how social policies and social institutions influence the course of human lives and how people can influence social policies. Students develop a strong interdisciplinary foundation in the social sciences and gain an understanding of current social policy issues, drawing on research in anthropology, communication studies, economics, ethnic studies, gender studies, history, philosophy, political science, public health, and sociology. Examples of interdisciplinary specializations include education policy and reform, urban issues and policy, health care issues and policy, legal issues, and environmental issues and policy.

Students are encouraged to use elective credits to build specialties in such areas as juvenile justice, advocacy programs, and policy analysis and to develop the oral and written communication skills important to success in law school and public policy positions.

## Program of Study

- Social Policy Major (p. 141)

**SOC\_POL 307-0 Educational Policy (1 Unit)** Conflict between societal imperatives to select and prepare young people for future careers and to offer youths opportunity; how society and schools address this conflict; various approaches to policy reform.

**SOC\_POL 312-0 Social Policymaking and Implementation (1 Unit)** Examines the process by which social policies are made, the process and realities of their implementation, and the attendant politics.

**SOC\_POL 313-0 Race, Inequality, and the Political Analysis of Public Policy (1 Unit)** The purpose of this course is to make you a better political analyst. This course will familiarize you with substantive research on politics that has concrete insights for reformers, political advocates, and other public policy stakeholders. The class will cover substantive issues in politics along with how they intersect with class, race, gender and partisanship. While the main focus of the course is to discuss critical issues, there will also be an emphasis on public policy and political science writing formats, styles and standards. It cannot be emphasized enough how important research, analytic and writing skills are to virtually all careers; nothing is more quickly discrediting of good ideas than bad writing. The first half of class is mainly lecture and discussion. The second half of class has been designed to promote your learning as a writer and thinker in public policy. It will provide students with a designated forum for developing and "work shopping" their written work and discussing issues covered in class. The TA will offer feedback on questions as students write, edit, and revise their papers. We will also frequently practice skills in responding critically to colleagues' texts. One or more quizzes may be administered as well.

**SOC\_POL 315-0 Global Human Trafficking (1 Unit)** We will examine the context of modern slavery against a backdrop of colonialism and slavery to understand key features of modern slavery, both as the crime is perpetuated and variations in legal definitions.

**SOC\_POL 330-0 Economics of Social Policy (1 Unit)** Economic concepts and empirical tools to analyze the design and effects of social policies. Topics include the social safety net, health insurance, minimum wage,

and taxation. Pre-Requisites are Econ 281 and Econ 310-1 or SESP 310 for SESP students. SOC\_POL 330-0 and ECON 333-0 are taught together; may not receive credit for both. SESP students must register for SOC\_POL 330-0.

### **SOC\_POL 331-0 Economics of Inequality and Discrimination (1 Unit)**

Economic concepts and empirical tools to analyze the causes and consequences of inequality and discrimination. Topics include housing policy, crime, earnings inequality, and the role of education. Prerequisites: ECON 202-0 or equivalent and SESP 210-0 or equivalent.

### **SOC\_POL 332-0 Economics of Education Policy (1 Unit)**

Economic concepts and empirical tools to analyze the design and effects of education policies, including school choice, accountability, education finance, class size policy, and teacher compensation and retention. Prerequisites: ECON 202-0 or equivalent and SESP 210-0 or equivalent.

### **SOC\_POL 333-0 Economics of Health, Human Capital, and Happiness (1 Unit)**

**(1 Unit)** Understanding causal relationships is a central goal in social science and science in general. It is not sufficient to observe what is happening, we need to know why it is happening. In this course students will learn the toolbox of causal inference econometrics with applications to the economics of health, human capital, and subjective wellbeing. The empirical methods we will cover include multivariate regressions, panel data, difference-indifference designs, instrumental variables, randomized control trials, and regression discontinuities. Health, human capital, and subjective wellbeing ("happiness") are core dimensions of social welfare and inequality in our society. To develop effective social policies, however, it is crucial to understand the causal mechanisms driving these factors. Prerequisites: ECON 202-0 (Intro to Microeconomics) or equivalent and a 200-level statistics class (SESP 210-0, STAT 202-0, STAT 210-0 and PSYCH 201-0 are all suitable).

**SOC\_POL 334-0 Quantitative Tools for Policy Analysis (1 Unit)** Hands on analysis of the real time challenges facing a range of policy areas and industries across federal and state governments and the private sector.

*Formal Studies Distro Area*

### **SOC\_POL 335-0 Women and American Political Leadership (1 Unit)**

With women comprising 51% of the American population, yet having significantly lower political representation, we will explore the evolution of women's political leadership in our nation.

**SOC\_POL 351-0 Special Topics in Social Policy (1 Unit)** Advanced work on special topics.

### **SESP 114-0 Summer Internship (0 Unit)**

### **SESP 115-0 Internship (0 Unit)**

**SESP 116-0 Finding Your Path (0 Unit)** A continuation of Finding Your Path: Pathways and Future Possibilities (SESP 251), a course that supports second-year students most impacted by the historical and contemporary realities of classism and racism as they map their path forward to career fulfillment. This class is a 0 credit class in which Pathways students conduct a search for a summer internship and then complete said internship.

### **SESP 195-1 Civic Engagement 1- Participatory Policymaking (1 Unit)**

Policy implementation involves more than just identifying and researching options, policymakers must, consider design program design, costs & sustainability; political feasibility, and building political support. In this class, you will learn how to design policy for implementation through Northwestern's Participatory Budgeting process.

### **SESP 195-2 Civic Engagement 2: Participatory Budgeting (1 Unit)**

Democracy gives limited opportunities for citizens to influence decision-making. In this class you will learn to implement open democracy

innovations, that are more inclusive, more representative, and lead to better policy outcomes, by implementing a campus-wide participatory budgeting process, where community decides how to spend \$1000 to address climate change.

**SESP 195-3 Civic Engagement 3: Organizing, Gathering & Policy implementation (1 Unit)** How do we motivate people to take action? In this class, you will learn the techniques of relational organizing (canvassing, one-on-ones, public narrative), designing civic gatherings (Civic Saturdays) that move people to action to build social movements. You will also oversee policy implementation of community development projects selected in the participatory budgeting process.

**SESP 200-0 Understanding Knowledge (1 Unit)** What does it mean to know something? What are the different types of knowledge and what distinguishes them from one another? What counts as fact vs. opinion vs. belief and so on; who gets to decide and under what conditions? How is knowledge produced and how does it gain traction? How does the source and type of knowledge interact with socio-political-cultural constructs and systems of power and, in turn, how can "knowledge" be used to produce and/or perpetuate power and privilege or to empower those who are marginalized? Finally, how does what we do in SESP and at Northwestern as both consumers and producers of knowledge fit within the landscape of these questions? In this course students will explore these and other questions to gain insight into the social production, distribution, consumption, interpretation, and operationalization of "knowledge." Using primarily seminar-style discussion, the first portion of the course focuses on building and analyzing theoretical frameworks and applied texts in order to generate a working understanding of "knowledge" in its myriad forms. Among our goals for the first portion of the course is to tie theoretical, academic, and "folk" knowledges to everyday experiences and the world around us writ large. The second portion of the class will involve a series of applied cases studies, including welcoming members of the SESP faculty community to present on their research, which we will work to bring into conversation with our generated frameworks regarding the sources, types, and implications of knowledge.

**SESP 201-0 Human Development: Childhood and Adolescence (1 Unit)** Personal, social, and cognitive development from birth through adolescence. Interplay of biological and experiential factors on linguistic and conceptual development, ego, and personality.

**SESP 203-0 Human Development: Adulthood and Aging (1 Unit)** Psychological, sociological, and biological factors influencing socialization and development from young and middle adulthood through old age. Influences of family, school, and work on the individual.

**SESP 204-0 Designing for Social Change (1 Unit)** A key goal of this course is to acquire an intellectual and applied understanding of the principles of program design and development, which include a sustained consideration of issues affecting the quality of program implementation. This course is best suited for FIRST AND SECOND YEAR students.

**SESP 210-0 Introduction to Statistics and Research Methodology (1 Unit)** Definitions and classifications of terms used in quantitative methods; measures of typical and maximum performance, reliability, and validity checks; reporting and displaying data; interpreting results.

**SESP 218-0 Leaders Lab (1 Unit)** Leaders Lab is an interactive, engaging and dynamic fall quarter course that was created and designed for incoming first and second-year students in SESP to reflect, experience and engage in dialogue about the "big" questions in life such as: who am I? What is my purpose in life? How can I be me? What are my responsibilities to the communities I'm a part of? Why do I serve? What is leadership? How can I lead? This course is associated with the SESP

Leadership Institute. Only students enrolled in the leadership institute can register for this course.

**SESP 251-0 Special Topics (1 Unit)** N/A.

**SESP 260-0 Community Based Research Methodologies: Educational Justice (1 Unit)** This course examines the histories, ideas, practices, relations and possible futures that shape struggles for educational justice and human thriving. The course is unique in that it brings together an intergenerational group of thinkers and learners (high school students, undergraduate students, youth workers, graduate students, professors, high school teachers and community members) to engage in collaborative study, reflection and design.

**SESP 272-0 Field Research Methods (1 Unit)** Guided practice in systematic and participant observation. Observer bias, field notes, unobtrusive measures.

**SESP 291-1 Peer-Led Learning: Theory and Practice (0.25 Unit)** SESP 291 is the training program for students working as first-time mentors in the Peer Leaders program. It is taken over two academic quarters, with each quarter offering .25 credit (a total of .5 credit). You will receive a "K" grade for fall quarter, which means you are continuing in the course. After winter quarter, you will receive a letter grade which will be retroactively applied to fall quarter.

**SESP 291-2 Peer-Led Learning: Theory and Practice (0.25 Unit)**

**SESP 295-1 Leadership Studio I (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to students who have completed the first year sequence of the certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SESP 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SESP 195-1, 195-2, 195-3 to enroll.

**SESP 295-2 Leadership Studio II (1 Unit)** Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors. Course is only open to student who have completed the first year sequence of the Civic Engagement Certificate. Prerequisites: Prior to 2024-2025 students will need to have completed SESP 195-0 3 times to enroll. 2024-2025 and beyond, students will need to have completed SESP 195-1, 195-2, 195-3 to enroll.

**SESP 298-0 Student Organized Seminar (1 Unit)** Courses proposed by students and supervised by faculty sponsors on special topics approved by the SESP undergraduate education director. May be taken only once per quarter; pass/no credit only. Consultation with the SESP student affairs assistant dean advised.

**SESP 299-1 Civic Engagement Capstone Research (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 299-2 Certificate in Civic Engagement- Capstone Project (1 Unit)** Independent study courses leading to completion of the Certificate in Civic Engagement capstone project.

**SESP 310-0 Causal Methods for Evaluating Policy (1 Unit)** This course will provide students with a framework for understanding causal inference and a toolkit for making causal claims using quantitative data.

**Prerequisites:** Students need to have taken SESP 210-0 or any 200-level STATS course.

**SESP 320-0 Race and Education (1 Unit)** Conceptual underpinnings of the construct of race and how conceptions of race have influenced the course of education in the United States.

**SESP 322-0 Crafting Child Policy (1 Unit)** This course is open to undergraduate students interested in the intersection of child development, social policy, and applied research. The course will guide students in how to apply psychological theory and rigorous research methods to the study of child and family policies in real-world settings. Working in groups, students will have the opportunity to answer pressing questions posed by the Illinois Governor's Office of Early Childhood Education and Chicago's Office of the Mayor. Group projects have the potential to help inform the structure and development of the state's innovative policies for young children (birth to 8) and their families.

**SESP 323-0 Trauma and Atrocity: Holocaust Memory, Memorial and Museums (1 Unit)** What is Holocaust memory? How has Holocaust memory changed over time, and how does the Holocaust continue to affect our understanding of trauma, atrocity, and human rights today? This seminar addresses individual memory, including survivor and witness testimony, memory and trauma, and the impact of the Holocaust on survivors' families and communities.

**SESP 324-0 Pedagogies for History and Injustice: Holocaust Education Design (1 Unit)** N/A.

**SESP 325-0 Race, Adolescence, and School Discipline (1 Unit)** In recent years, racial disparities in school discipline have attracted the attention of educators, policymakers, parents, and the general public. Why is it so hard for legal, political, and educational institutions to improve school discipline? How do intersections of race, gender, and social class matter for students' experiences of school discipline? Are there schools that are getting discipline right? What does that look like, and to what extent can other schools learn from their successes? In this course, we will learn about evidence-based policy improvements and imagine how to create schools where race does not predict discipline.

**SESP 351-0 Special Topics (1 Unit)** Advanced work on special topics.

**SESP 351-SA Special Topics (1 Unit)** Advanced work on special topics. This course is limited to students approved to study abroad through the Global Learning Office (GLO).

**SESP 360-0 Magic Monsters & the Holocaust (1 Unit)** In this course, we'll explore public learning about the Holocaust through popular film and fiction. We'll question which historical narratives are being told and which are being ignored, and we'll ask why and how genres like fantasy, sci-fi, fairy tales, and time travel are commonly used to bring stories of mass-violence to the public.

**SESP 381-0 BSED/BSJ Experiential Learning Community Workshop Series (0 Unit)** In their second year, students choose 1 experiential education requirement – either the SESP Practicum, Student Teaching, or Medill Journalism Residency for 4 units of credit. The students participate in the Community Workshop Series during the year they complete their experiential education requirement.

**SESP 390-0 Research Apprenticeship (1 Unit)** Opportunity to participate in faculty research projects. Prerequisites: consent of the faculty member and the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

**SESP 391-0 Advanced Research Design (1 Unit)** Overview of research methods that may be used to design and implement the honors thesis. Prerequisites: SESP 210-0 and SESP 272-0 recommended.

**SESP 392-0 Experiential Learning: Practicum (4 Units)**

**SESP 392-SA Experiential Learning: Practicum Study Abroad (4 Units)**

**SESP 398-0 Senior Thesis Seminar (1-3 Units)** Students develop, design, implement, and evaluate a research project under a faculty advisor's guidance. Prerequisites: senior status, cumulative GPA by the end winter quarter of the junior year, recommendation for the honors program from SESP 391-0 instructor(s); consent of program director.

**SESP 399-0 Independent Study (1 Unit)** Faculty-supervised study of special topics of the student's own choosing and not covered in regular courses. Prerequisites: consent of the supervising faculty member(s) and the SESP assistant dean for student affairs; submission of completed Request for Independent Study/Special Courses Form at registration.

## Social Policy Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Concentration Program—16 units \*

\* 8 of the 16 units need to be at the 300-level

Course	Title
<b>Required Courses (9 units)</b>	
SOC_POL 312-0	Social Policymaking and Implementation
ECON 202-0	Introduction to Microeconomics
POLI_SCI 220-0 or POLI_SCI 240-0 or POLI_SCI 250-0	American Government and Politics Introduction to International Relations Introduction to Comparative Politics
1 course from Contexts and Disciplinary Understandings *	
LRN_SCI 224-0	Holocaust Education Design
SOC_POL 351-0	Special Topics in Social Policy (Social Opportunity and Education Policy)
SOC_POL 351-0	Special Topics in Social Policy (Children and Family Policy)
SOC_POL 351-0	Special Topics in Social Policy (Religion and Policy)
SESP 323-0	Trauma and Atrocity: Holocaust Memory, Memorial and Museums
SESP 351-0	Special Topics (Anthropology of Literacy)
SESP 360-0	Magic Monsters & the Holocaust
TEACH_ED/LRN_SCI 302-0	Social, Cultural, and Linguistic Contexts of Education
TEACH_ED 309-0	Designing and Supporting Discourse-Rich Environments for Learning
BLK_ST 213-0	History of the Black World
BLK_ST 214-0	Comparative Race and Ethnic Studies
BLK_ST 215-0	Introduction to Black Social & Political Life
BLK_ST 218-0	Asian/Black Historical Relations in the U.S.
ASIAN_AM 214-0	Asian American History
LATINO 218-0	Latino History
ANTHRO 221-0	Social and Health Inequalities
1 course for the Contemporary Issues cluster from: *	
LRN_SCI 351-0	Topics in Learning Sciences
SOC_POL 313-0	Race, Inequality, and the Political Analysis of Public Policy

SOC_POL 315-0	Global Human Trafficking
SOC_POL 335-0	Women and American Political Leadership
SOC_POL 351-0	Special Topics in Social Policy (Social Side of College or Global Education or Contemporary Issues in Social Policy)
SESP 322-0	Crafting Child Policy
SESP 195-1	Civic Engagement 1- Participatory Policymaking
SESP 195-2	Civic Engagement 2: Participatory Budgeting
SESP 195-3	Civic Engagement 3: Organizing, Gathering & Policy implementation
SESP 360-0	Magic Monsters & the Holocaust
HDC 330-0	Adolescent Stress: Sources and Solutions
LRN_SCI 351-0	Topics in Learning Sciences (Indigeneity, Race and Place in Education)
2 courses from Change in People and Organizations cluster	
LOC/LRN_SCI 214-0 or LOC 214-BR	Culture and Cognition Culture and Cognition: SESP Leadership Institute
LOC 306-0	Studies in Organizational Change
LOC/LRN_SCI 308-0	Redesigning Everyday Organizations
LOC 311-0	Tools for Organizational Analysis
LOC/HDC 351-0	Topics in Learning and Organizational Change (Identities, Intersections, and Organizations)
HDC 305-0	Identity and Motivation
HDC 307-0	Emotional Mysteries
HDC 330-0	Adolescent Stress: Sources and Solutions
HDC 351-0	Special Topics in Human Development in Context (Myths and Facts of Adolescence )
LRN_SCI 202-0	Culture, Language, & Identity
LRN_SCI 309-0	Inclusive Making
SESP 251-0	Special Topics (Coming of Age and Growing Old in the 21st Century)
SESP 195-1	Civic Engagement 1- Participatory Policymaking
SESP 195-2	Civic Engagement 2: Participatory Budgeting
SESP 195-3	Civic Engagement 3: Organizing, Gathering & Policy implementation
TEACH_ED 329-0	Cognition and Culture in Teaching and Learning
2 courses from Methodological Understandings:	
SOC_POL 330-0/ ECON 333-0	Economics of Social Policy
SOC_POL 331-0	Economics of Inequality and Discrimination
SOC_POL 332-0	Economics of Education Policy
SOC_POL 333-0	Economics of Health, Human Capital, and Happiness
SOC_POL 334-0	Quantitative Tools for Policy Analysis
SOC_POL 351-0	Special Topics in Social Policy (Intersectionality, Measurement, and Public Policy)
LOC/HDC 347-0	Mapping and Spatial Analysis for Social Issues
SESP 251-0	Special Topics (Intro to Social Science Research)
SESP 310-0	Causal Methods for Evaluating Policy
LRN_SCI 351-0	Topics in Learning Sciences (Indigenous Methods in Research)
LRN_SCI 351-0	Topics in Learning Sciences (Text Mining for Education, Organizations and Social Science Research)
Concentration Extension Courses (7 units)	

Must be selected from an approved list of courses in SOC POL, other SESP concentrations, and disciplines such as communication studies, economics, ethnic studies, political science, and sociology. Must include at least 4 courses at the 300 level. Up to 3 units of SESP 390-0 Research Apprenticeship or SESP 399-0 Independent Study and 3 units of SESP 398-0 Honors Thesis may be counted toward this requirement.

\* Students may substitute courses outside of this list with the approval of their SESP academic adviser.

## SESP Core (8 units)

Course	Title
<b>Seminar—1 unit</b>	
SESP 200-0	Understanding Knowledge
<b>Human Development—1 unit</b>	
SESP 201-0 or PSYCH 244-0	Human Development: Childhood and Adolescence <sup>1</sup> Developmental Psychology
OR	
SESP 203-0	Human Development: Adulthood and Aging
OR	
HDC 310-0	The Art and Science of Aging
OR	
SESP 251-0	Special Topics (Coming of Age and Growing Old in the 21st Century)
OR	
HDC 351-0	Special Topics in Human Development in Context (Myths and Facts of Adolescence )
<b>Methodologies —2 units</b>	
SESP 210-0 or STAT 202-0 or STAT 210-0 or PSYCH 201-0 or SOCIO 303-0	Introduction to Statistics and Research Methodology Introduction to Statistics and Data Science Introduction to Probability and Statistics Statistical Methods in Psychology Analysis and Interpretation of Social Data
SESP 272-0	Field Research Methods
<b>Experiential Learning—4 units <sup>2</sup></b>	
SESP 392-0 or SESP 392-SA	Experiential Learning: Practicum Experiential Learning: Practicum Study Abroad

<sup>1</sup> PSYCH 110-0 Introduction to Psychology is a prerequisite for PSYCH 244-0 and PSYCH 201-0.

<sup>2</sup> This 4-unit course may be taken either for 1 quarter during junior year or for nine weeks during the Summer Session before or after junior year; no fifth unit may be taken concurrently without special permission. At least 2 quarters before registering for the course, students must consult the SESP practicum director regarding procedures and site-placement application materials. For Summer Session practicums, consultation should be scheduled at least 3 quarters in advance.

## Overlay Requirements\*

\* Overlay requirements are fulfilled by courses taken for the concentration

Course	Title
<b>Global Engagement</b>	
1 quarter of study abroad or 3 quarters of foreign language or equivalent.	
<b>Heterogeneities, Systems, and Inequalities</b>	

1 course counted towards the concentration: HDC 305-0, LOC 214-0, LOC 214-BR, LOC 351-0 (Identities, Intersection, and Organizations or Global Organizations & Leadership), LRN\_SCI 202-0, LRN\_SCI 214-0, LRN\_SCI 224, LRN\_SCI 302-0, LRN\_SCI 309-0, LRN\_SCI 351-0 (Identity, Power, and the Historical Imaginary Across Social Contexts), SESP 195-0, SESP 251-0 (Finding Your Path: Future Possibilities and Social Change), SESP 260-0, SESP 323-0, LRN\_SCI 351-0 (Computing, Ethics, and Society), SESP 351-0 (Anthropology of Literacy or Anthropology of Education), SESP 360-0, SOC\_POL 313-0, SOC\_POL 315-0, SOC\_POL 331-0, SOC\_POL 333-0, SOC\_POL 351-0 (Intersectionality, Measurement, and Public Policy or Religion and Policy or Social Side of College), TEACH\_ED 301-0, TEACH\_ED 302-0, TEACH\_ED 329-0

#### Methods in Context

1 course counted towards the concentration: HDC 330-0, HDC 347-0, LOC 308-0, LOC 311-0, LOC 313-0, LOC 347-0, LRN\_SCI 224-0, LRN\_SCI 301-0, LRN\_SCI 309-0, LRN\_SCI 313-0, LRN\_SCI 326-0, LRN\_SCI 351-0 (Sports, Technology and Learning or Text Mining for Education, Organizations, and Social Science Research or Transforming Computer Science Education or Indigenous Methods in Research), LRN\_SCI 372-0, SESP 251-0 (Intro to Social Science Research), SESP 260-0, SESP 310-0, SESP 323-0, SESP 360-0, SOC\_POL 330-0, SOC\_POL 331-0, SOC\_POL 332-0, SOC\_POL 333-0, SOC\_POL 334-0, SOC\_POL 351-0 (Social Side of College or Intersectionality, Measurement, and Public Policy)

## Foundational Disciplines (10 units)

- 2 natural sciences (NS) courses
- 2 empirical and deductive reasoning (EDR) courses
- 2 historical studies (HS) courses
- 2 ethical and evaluative thinking (EET) courses
- 2 literature and arts (LA) courses

Selected courses from Weinberg College and professional schools across the University may be used to fulfill distribution requirements with the consent of the student's adviser and the SESP assistant dean for student affairs.

## Electives (8 units)

Courses from any school across the University may be used to fulfill elective requirements. Students are encouraged to discuss their elective plans with their advisers; they may be able to pursue a second major or a minor using elective credits.

## Civic Engagement Certificate

[sesp.northwestern.edu/ugrad/civic-engagement-program](http://sesp.northwestern.edu/ugrad/civic-engagement-program)

The Civic Engagement Certificate prepares motivated students to make a positive impact in their communities by organizing and mobilizing to implement policy. In the certificate, you learn by doing, in a community of like-minded students and community partners to make real world impact.

The "first year" certificate classes include:

- SESP 195-1 (Fall) Participatory policymaking. Policy implementation involves more than just identifying and researching options, policymakers must consider design program design, costs & sustainability; political feasibility, and building political support. In this class, you will learn how to design policy for implementation through Northwestern's Participatory Budgeting process.
- SESP 195-2 (Winter) - Participatory budgeting. Democracy gives limited opportunities for citizens to influence decision-making. In this class you will learn to implement open democracy innovations, that are more inclusive, more representative, and lead to better policy outcomes, by implementing a campus-wide participatory budgeting

process, where community decides how to spend \$1000 to address climate change.

- SESP 195-3 (Spring) - Organizing, gathering & policy implementation for social change. How do we motivate people to take action? In this class, you will learn the techniques of relational organizing (canvassing, one-on-ones, public narrative), designing civic gatherings (Civic Saturdays) that move people to action to build social movements. You will also oversee policy implementation of community development projects selected in the participatory budgeting process.

Students must complete an interest form (<https://sesp.northwestern.edu/undergraduate/options-concentrations/civic-engagement-certificate/>) and interview to be admitted to any of the first-year courses. Students can complete the sequence in any order, as long as they complete all three courses.

"Second year" certificate classes include 2 quarters:

- SESP 295-1 & SESP 295-2 - Leadership Studio- Learning organizing requires building a real organization. Students accepted to the certificate program will further develop their organizing skills by taking a leadership role on the executive board of Open Democracy Northwestern (undergraduate club). Leaders will develop strategy, train club members, manage operations. Leaders will receive weekly coaching from instructors.

Students must apply to earn the civic engagement certificate after completing the SESP 195 coursework and interview with Open Democracy Evanston executive board and course instructor.

# ROBERT R. MCCORMICK SCHOOL OF ENGINEERING AND APPLIED SCIENCE

mccormick.northwestern.edu

The McCormick School of Engineering and Applied Science is committed to providing leadership for the technological foundation of our society, economy, environment, and culture. The school's mission is twofold: the personal and professional development of its students and faculty and the development and application of new technology, which is increasingly interdisciplinary.

McCormick is dedicated to a high standard of excellence in

- Teaching fundamentals of science and engineering disciplines and stimulating students to become innovative thinkers and leaders able to cope with complex issues in a changing environment
- Preparing undergraduate and graduate students capable of understanding, applying, and contributing to technology in whatever areas or careers they pursue

Undergraduate students in McCormick may follow a curriculum leading to a bachelor of science degree in any of the following fields:

- applied mathematics (p. 184)
- biomedical engineering (p. 149)
- chemical engineering (p. 153)
- civil engineering (p. 157)
- computer engineering (p. 176)
- computer science (p. 167)
- electrical engineering (p. 176)
- environmental engineering (p. 157)
- industrial engineering (p. 191)
- manufacturing and design engineering (p. 204)
- materials science and engineering (p. 196)
- mechanical engineering (p. 200)

The programs in biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, environmental engineering, manufacturing and design engineering, materials science and engineering, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET (abet.org). For further information on ABET standards and course partitioning visit [www.mccormick.northwestern.edu/academics/undergraduate/abet/](http://www.mccormick.northwestern.edu/academics/undergraduate/abet/) (<https://www.mccormick.northwestern.edu/academics/undergraduate/abet/>)

With the proper use and combination of requirements, options, and electives, students may prepare themselves for graduate work in engineering or for postbaccalaureate degrees in medicine, law, business, or other areas. Bachelor of science degrees are also awarded in approved ad hoc integrated engineering studies (p. 144) programs.

Graduate programs of study are available in all of the above fields as well as in analytics, applied physics, biotechnology, engineering design and innovation, engineering management, information technology, manufacturing management, product design and development, project management, robotics, technology and social behavior, and theoretical

and applied mechanics. Programs leading to degrees at the master's and doctoral levels are described in detail in publications of the Graduate School and engineering graduate programs.

Excellence in research is a distinguishing characteristic of the engineering faculty. Working at the frontiers of knowledge, faculty members are positioned to maintain currency in courses and curricula and to develop an atmosphere inspiring scholarship, discovery, and originality among students.

McCormick has a student body of approximately 1,850 undergraduates and 2,140 graduate students. It is housed in the Technological Institute complex, which contains nearly 2 million square feet of floor area and provides excellent educational and research facilities.

## Academic Requirements

### Requirements for the Degree of Bachelor of Science

Students must successfully complete all 48 units of the curriculum or have equivalent academic experience. Students who interrupt their programs of study for an extended time during which degree requirements are changed will normally be held to the new requirements. Those who encounter curricular changes during their period of enrollment may choose to follow any curriculum during that period but must meet its requirements completely.

All curricula leading to a bachelor of science degree in engineering or applied science have the same basic components: mathematics, engineering analysis and computer proficiency, basic sciences, design and communications, basic engineering, social sciences/humanities, unrestricted electives, and the major program. Courses qualifying for these components are listed within each department's program page.

General requirements for the bachelor of science degree are as follows:

#### Core Courses (27 units)

##### Mathematics (4 units)

- Standard for all degree programs

Course	Title
MATH 220-1	Single-Variable Differential Calculus
MATH 220-2	Single-Variable Integral Calculus
MATH 228-1	Multivariable Differential Calculus for Engineering <sup>1</sup>
MATH 228-2	Multivariable Integral Calculus for Engineering <sup>1,2</sup>

<sup>1</sup> ES\_APPM 252-1 Honors Calculus for Engineers, ES\_APPM 252-2 Honors Calculus for Engineers may substitute for MATH 228-1 Multivariable Differential Calculus for Engineering and MATH 228-2 Multivariable Integral Calculus for Engineering.

<sup>2</sup> The computer science degree program requires COMP\_SCI 212-0 Math Foundations of CS Part 1: Discrete Math for CS instead of MATH 228-2 Multivariable Integral Calculus for Engineering.

#### Engineering Analysis and Computer Proficiency (4 units)

- Standard for all degree programs

Course	Title
GEN_ENG 205-1 or GEN_ENG 206-1	Engineering Analysis I <sup>1</sup>
GEN_ENG 205-2	Honor Engineering Analysis
GEN_ENG 205-2	Engineering Analysis II
GEN_ENG 205-3	Engineering Analysis III

GEN_ENG 205-4 or GEN_ENG 206-4	Engineering Analysis IV <sup>1, 2, &amp; 3</sup> Honors Engineering Analysis IV
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- <sup>1</sup> The Engineering Analysis I and IV requirements may be satisfied by completing either the regular courses GEN\_ENG 205-1 Engineering Analysis I and GEN\_ENG 205-4 Engineering Analysis IV or the honors courses GEN\_ENG 206-1 Honor Engineering Analysis and GEN\_ENG 206-4 Honors Engineering Analysis IV. Engineering Analysis II and III only offer regular courses.
- <sup>2</sup> The computer science degree program requires COMP\_SCI 111-0 Fundamentals of Computer Programming instead of Engineering Analysis IV.
- <sup>3</sup> The industrial engineering degree program requires ES\_APPM 245-0 ([https://catalogs.northwestern.edu/search/?P=ES\\_APPM%20245-0](https://catalogs.northwestern.edu/search/?P=ES_APPM%20245-0)) Elementary Applied Linear Algebra instead of Engineering Analysis IV

### Basic Sciences (4 units)

- At least 1 course with an associated required laboratory co-registration (.34 units) from the following list of courses is required
- Eligible courses may vary by degree program; see program for details.

Course	Title
<b>At least 1 unit (with required lab) from the options below</b>	
BIOL_SCI 202-0 & BIOL_SCI 232-0	Cell Biology and Molecular and Cellular Processes Laboratory
CHEM 131-0 & CHEM 141-0 or CHEM 151-0 & CHEM 161-0 or CHEM 171-0 & CHEM 181-0	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I General Chemistry I and General Chemistry Laboratory I Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
PHYSICS 135-2 & PHYSICS 136-2 or PHYSICS 125-2 & PHYSICS 126-2 or PHYSICS 140-2 & PHYSICS 136-2	General Physics and General Physics Laboratory General Physics for ISP and Physics Laboratory for ISP Fundamentals of Physics and General Physics Laboratory

- Remaining units can be taken from the courses above or from the approved list of courses below.

Course	Title
<b>Biological Sciences</b>	
BIOL_SCI 150-0	Human Genetics
BIOL_SCI 201-0	Molecular Biology
BIOL_SCI 203-0 & BIOL_SCI 233-0	Genetics and Evolution and Genetics and Molecular Processes Laboratory
BIOL_SCI 234-0	Investigative Laboratory
CHEM_ENG 275-0	Molecular & Cell Biology for Engineers
CIV_ENV 202-0	Biological and Ecological Principles
<b>Chemistry</b>	
CHEM 132-0 & CHEM 142-0 or CHEM 152-0 & CHEM 162-0 or CHEM 172-0 & CHEM 182-0	Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II General Chemistry II and General Chemistry Laboratory II Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory

CHEM 215-1 & CHEM 235-1	Organic Chemistry I and Organic Chemistry Lab I
CHEM 215-2 & CHEM 235-2	Organic Chemistry II and Organic Chemistry Lab II
<i>Earth and Planetary Sciences/Astronomy</i>	
ASTRON 220-1	Introduction to Astrophysics I: Life Cycle of Stars and Planets
ASTRON 220-2	Introduction to Astrophysics II: Galactic Evolution and Cosmology
CIV_ENV 203-0	Earth in the Anthropocene
EARTH 201-0	Earth Systems Revealed
EARTH 202-0	Earth's Interior
EARTH 203-0	Earth System History
<i>Physics</i>	
PHYSICS 135-3 & PHYSICS 136-3 or PHYSICS 125-3 & PHYSICS 126-3 or PHYSICS 140-3 & PHYSICS 136-3	General Physics and General Physics Laboratory General Physics for ISP and Physics Laboratory for ISP Fundamentals of Physics and General Physics Laboratory
PHYSICS 239-0	Foundations of Modern Physics
<i>Neuroscience and Cognition</i>	
COG_SCI 210-0	Language and the Brain
CSD 202-0	Neurobiology of Communication
CSD 303-0	Brain and Cognition
PSYCH 221-0	Introduction to Neuroscience

- Students must complete 4 units of Basic Science courses, selected from the approved list of courses.
- Lab courses may count toward basic science requirements only in combination with their corresponding lecture courses.

### Design and Communications (3 units)

- Standard for all degree programs

Course	Title
<b>Writing and Design</b>	
DSGN 106-1 & DSGN 106-2	Design Thinking and Communication and Design Thinking and Communication
ENGLISH 106-1 & ENGLISH 106-2	Writing in Special Contexts and Writing in Special Contexts
<b>Speaking</b>	
Select one of the following:	
COMM_ST 102-0	Public Speaking
PERF_ST 103-0	Analysis and Performance of Text
PERF_ST 203-0	Performance Culture and Communication
BMD_ENG 390-2	Biomedical Engineering Design <sup>1</sup>

<sup>1</sup> The biomedical engineering degree program requires BMD\_ENG 390-2 Biomedical Engineering Design to satisfy the speaking requirement.

### Social Sciences/Humanities (Theme) (7 units)

- Standard for all degree programs
- Students must submit theme form for approval by winter quarter of their junior year.
- Following is a partial list of requirements; a complete list is available via the McCormick Advising System.
  - 7 social sciences/humanities courses
  - Maximum of 5 credits from either category

- At least 3 courses must be thematically related
- No more than 3 100-level courses
  - Students who transfer from another university or who earn study abroad credit may petition to exceed the 100-level course limit.
- AP, IB, and transfer credits are eligible to count toward this requirement

### **Unrestricted Electives (5 units)**

Standard for all degree programs: students may take any credit course in the University to explore or extend technical or nontechnical interests.

### **Major Program (21 units)**

Each degree program in the McCormick School finds its depth in the major program's 21 units. These 21 units are made up of departmental sequences that build competency in the field as well as technical electives that allow students to explore areas of interest within the discipline. Technical electives provide opportunity for individualization, but coherence in the selection of elective courses is still necessary.

Each department maintains its own set of major program requirements which can be found on the program specific pages of this catalog. Students must meet both the school's and the major program's curricular requirements.

Taking courses regarded as duplicates will increase the number of requirements needed to earn a McCormick degree. For a list of course duplicates visit: [www.mccormick.northwestern.edu/students/undergraduate/advising-registration/course-duplicates.html](http://www.mccormick.northwestern.edu/students/undergraduate/advising-registration/course-duplicates.html) (<https://www.mccormick.northwestern.edu/students/undergraduate/advising-registration/course-duplicates.html>)

McCormick students may use no more than 4 units of transfer credit based on work completed elsewhere within the 21-unit Major Program portion of degree requirements. Any such use of transfer credit must be approved by both the department and school. The 4-unit limit does not apply to transfer credit used to satisfy other categories within McCormick degree requirements, although all McCormick students are required to satisfy the Undergraduate Registration Requirement (URR).

### **Grade Requirements**

A grade point average (GPA) of not less than 2.0 is required for all units presented for the degree. Students must have received a grade of C or higher in any course taken elsewhere and used to fulfill a McCormick degree requirement. The GPA in the 21 units in the major program must also be at least 2.0; no more than 3 of these units may carry grades of D. Grades for courses fulfilling a minor must be C– or higher (unless otherwise noted in the minor requirements), and none of them may be a P.

Every candidate for a degree must file an application for the degree a year in advance of the date of graduation. This application is submitted directly within the McCormick Advising System.

In addition to and independent of the requirements set by McCormick, all students must satisfy the Undergraduate Registration Requirement (p. 27).

### **Integrated Engineering Studies Program**

The McCormick Integrated Engineering Studies (MIES) Program provides an alternative for students whose particular interests and goals cannot be satisfied by a regular program in engineering or applied science. To be eligible, students must have a cumulative GPA of 3.25 or above. They may apply as early as the end of their first year but no later than 3½ quarters

before completing the degree. Applicants must prepare a compelling argument for qualifying for this customized degree program. Examples of these ad hoc degrees from recent years include public health, engineering physics, biomedical engineering and molecular biology, analytics, and mechanical design. Students who complete this program are awarded a bachelor of science in integrated engineering studies, and their transcripts specify the themes of their courses of study. For additional details, visit the MIES webpage: [www.mccormick.northwestern.edu/academics/undergraduate/programs/integrated-engineering-studies.html](http://www.mccormick.northwestern.edu/academics/undergraduate/programs/integrated-engineering-studies.html) (<https://www.mccormick.northwestern.edu/academics/undergraduate/programs/integrated-engineering-studies.html>)

Students must complete 4 units of Basic Science courses, selected from the approved menu of course options.

## **Academic Policies**

### **Pass/No Credit Option**

The following requirements apply to the pass/no credit (P/N) option:

No more than 8 units taken P/N may be counted toward the 48 units required for the degree.

Only 1 unit per quarter may be taken P/N during the first and second years.

Core courses: Any 300-level course, but no more than 4 100- or 200-level courses, may be taken P/N to satisfy the 7-unit requirement in the social sciences/humanities. No courses may be taken P/N in the required mathematics, engineering analysis and computer proficiency, basic sciences, design and communications, and basic engineering areas.

Major program: Consult the responsible department office ([https://www.mccormick.northwestern.edu/students/undergraduate/advising-registration/pass-no-credit-option.html](http://www.mccormick.northwestern.edu/students/undergraduate/advising-registration/pass-no-credit-option.html)) or the Undergraduate Engineering Office regarding the regulations for use of P/N in each departmental program.

Credits earned under a P/N grading scheme at another institution may be applied toward McCormick requirements only if the P/N option is permissible for that requirement.

### **Advanced Placement and Exemptions**

Advanced placement and college credit may be granted on the basis of the College Entrance Examination Board (CEEB) Advanced Placement tests (or other appropriate international examinations), or special examinations in subject areas. Students may be exempted from certain McCormick requirements (with a corresponding reduction in degree requirements) on the basis of proficiency exams, or analysis of coursework completed elsewhere. These stipulations regarding placement, exemption, and degree requirements may differ from those of other schools of the University. Students receiving credit from AP examinations and other such programs must still meet the Undergraduate Registration Requirement.

## **Academic Options**

Students in the McCormick School have many opportunities to enhance their educational experience by pursuing additional programs and opportunities.

### **Undergraduate Honors Program**

Students with good scholastic records may apply to the Undergraduate Honors Program any time during their junior or pre-senior years. (Students within three quarters of graduation are past this admission

point.) At the time of admission to the honors program, they must have a cumulative GPA of 3.5 or better. Courses used to meet the honors requirements must also be used toward requirements for the bachelor's degree.

Honors students participating in the program must:

- Complete at least 3 units of approved advanced study (including courses normally accepted at the graduate level) with an average grade of B or better.
- Complete an extended independent study project (at least 2 quarters on the same topic) leading to an acceptable report.

Successful completion of the honors program will be noted on the student's transcript. Recognition also will be given in the Commencement program. If his or her performance is not judged to meet the honors standards, the student will still receive course grades and credits as earned.

## **Undergraduate Research**

Opportunities for Undergraduate Research (p. 43) are made available and encouraged. Each field of study offers independent study courses for research enrollment on an elective basis. Funding of undergraduate research is provided by faculty-directed programs and several McCormick School and University sources.

The McCormick Student Advisory Board holds an annual competition for the Harold B. Gotaas Award, which honors a graduating McCormick senior who has demonstrated excellence in undergraduate research.

Students normally perform undergraduate research projects under the direction of faculty doing research in their department and in laboratories throughout the University, including McCormick research centers. For more on McCormick's research activities, see [www.mccormick.northwestern.edu/research](http://www.mccormick.northwestern.edu/research) (<https://mccormick.northwestern.edu/research/>).

## **Second Field of Specialization**

Elective opportunities in McCormick curricula may be used in a departmental program in another school of the University as long as the secondary program also allows doubling counting of credits. Satisfactory completion of the requirements for the second program, verified by the appropriate department, will be noted on the student's transcript. Carefully planned electives will normally enable students to obtain a second field of specialization within the 48-unit requirement for the BS degree. For a complete list of major, minor, and certificate programs offered at Northwestern visit: [www.northwestern.edu/academics/undergraduate-a-to-z.html](http://www.northwestern.edu/academics/undergraduate-a-to-z.html) (<https://www.northwestern.edu/academics/undergraduate-a-to-z.html>)

## **Multiple BS Degrees in McCormick**

Students with wide-ranging interests may work toward two or more bachelor of science degrees in McCormick by satisfying the full requirements for each degree. At least 6 additional units of credit, or the equivalent, must be presented for each additional degree, and the work in multiple areas does not need to be completed at the same time. Each department or program must approve the course plan for its degree no later than two academic quarters before work for the second degree is completed but no earlier than junior year. Students pursuing two BS degrees within McCormick are held to the same Undergraduate Registration Requirement (URR) (p. 27) used for single degree seeking undergraduates.

## **Accelerated Master's Program**

Qualified McCormick undergraduate students may work simultaneously toward the bachelor of science and master of science degrees in engineering. Integrated planning of coursework makes it possible to take graduate-level courses during the third and fourth years. The requirements remain unchanged for the two degrees. The McCormick requirement for the BS is 48 units, and the requirement for the MS is specified by the individual department (9–12 units). No course used for the MS requirement may be counted toward the BS requirement.

Application for admission to concurrent BS/MS study must be approved by the appropriate department and the Graduate School. A department may require that students do additional work beforehand.

For additional information, including how to apply, visit: [www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/combined-bachelors-masters-program/](http://www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/combined-bachelors-masters-program/) (<https://www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/combined-bachelors-masters-program/>)

## **Dual Bachelor's Degree Programs with other NU Undergraduate Schools**

Qualified students may earn bachelor's degrees from two different undergraduate schools in Northwestern. Five years of full-time study are usually required. Students may pursue dual bachelor's degree programs between the McCormick School of Engineering and Applied Science and the Weinberg College of Arts and Sciences, the Bienen School of Music, or the School of Communication.

For additional details on these programs see Dual Bachelor's Degrees (p. 38). For information on applying to one of these programs see Application to Dual Bachelor's Degree Programs (p. 12).

## **Minors**

McCormick students are able to pursue the following minors in addition to a bachelor's degree. See the program pages for descriptions and requirements.

- Architectural Engineering and Design (p. 166)
- Artificial Intelligence (p. 148)
- Biotechnology and Biochemical Engineering (p. 156)
- Computer Science (p. 175)
- Entrepreneurship (p. 186)
- Environmental Engineering (p. 166)
- Machine Learning and Data Science (p. 176)
- Materials Science (p. 360) (minor offered by the Weinberg College of Arts & Sciences)
- Transportation and Logistics (p. 33) (minor offered by the Transportation and Logistics Program)
- 

Additional minors are available from other Northwestern schools and may be pursued by engineering students; that information may be found under Minors (p. 33) in the Additional Baccalaureate Options section.

## **Certificates**

McCormick students are able to pursue the following McCormick certificates in addition to a bachelor's degree. See the program pages for descriptions and requirements. **Of special note: Guidelines on certificates**

issued by Northwestern's Office of the Provost state that "a certificate requires academic course work of at least four units that are not applied to a major or minor." (In McCormick, 'major' refers to the 21-unit Major Program.) Individual certificate programs may set more stringent rules.

- Curious Life: (p. 176) The Curious Life Certificate (CLC) begins with a foundational experience called PATH. PATH will be taken as a CLC gateway course by first- and second-year students introducing them to a holistic approach to their performance as it relates to both their academic and personal life at Northwestern.
- Human Computer Interaction (p. 190): The HCI Certificate allows Northwestern students from all departments to develop their interest and exposure to ideas and research in HCI, including the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.
- Segal Design Certificate (p. 207): This certificate program, administered by the Segal Design Institute, develops a set of design skills valuable across the entire spectrum of careers available to McCormick graduates.

## **Cooperative Engineering Education Program**

The Walter P. Murphy Cooperative Engineering Education Program alternates periods of paid industrial experience with academic studies for full-time students in all departments of engineering and applied science. Students apply theory while gaining practical experience and develop an understanding of the responsibilities of their future professional careers.

There are two options for completing the Co-op Program:

- **Single Employer Option:** Students complete a minimum of 9 months (three quarters) with the same employer. The schedule must contain at least one six month (two quarter) work term.
- **Two Employer Option:** Students complete two six month (two quarter) work terms with two different employers. This is a minimum of 12 months (4 quarters) of work experience overall.

Students are registered for their work quarters, thus remaining enrolled at Northwestern. No tuition or fees are charged during co-op periods. At the end of each work period, employers are asked to evaluate student performance and progress.

In addition to the academic degree, students who successfully complete the schedule of school and work receive recognition as co-op students upon graduation from McCormick.

Learn more about the co-op program at:

[www.mccormick.northwestern.edu/career-development/programs/co-op/](http://www.mccormick.northwestern.edu/career-development/programs/co-op/) (<https://www.mccormick.northwestern.edu/career-development/programs/co-op/>)

## **Honors Program in Medical Education**

The Honors Program in Medical Education (HPME) is designed for exceptionally well-prepared high school students who seek careers in medicine or medical science. Undergraduate students entering Northwestern are admitted simultaneously to the Feinberg School of Medicine. HPME is no longer accepting new students. Details regarding requirements can be found in the 2020-2021 or earlier Undergraduate Catalogs (<https://catalogs.northwestern.edu/archives/>).

## **Student Resources**

McCormick strives to create an enriching academic environment where students are able to engage with a variety of resources and organizations.

### **Tutorial Program**

Northwestern offers academic support resources in the form of small-group mentoring, coaching, workshops, peer-guided study groups, and tutoring. For detailed information on available programs, including locations and hours, visit Academic Support and Learning Advancement: [www.northwestern.edu/academic-support-learning/](http://www.northwestern.edu/academic-support-learning/) (<https://www.northwestern.edu/academic-support-learning/>)

### **Faculty Advisers**

Entering McCormick students are assigned a first-year adviser. By the beginning of the sophomore year most students will have selected a program of study and will be reassigned an adviser in that area. Advisers assist in planning the program of study, but students retain the responsibility of meeting overall graduation requirements.

First-year students can find helpful information and first-year advisers' contact details by visiting [www.mccormick.northwestern.edu/students/undergraduate/first-year/](http://www.mccormick.northwestern.edu/students/undergraduate/first-year/) (<https://www.mccormick.northwestern.edu/students/undergraduate/first-year/>). Sophomores, juniors, and seniors can find their advisers listed in the McCormick Advising System. Advice on other subjects may be obtained by emailing [mccormick-school@northwestern.edu](mailto:mccormick-school@northwestern.edu).

### **McCormick Advising System**

All students have access to the McCormick Advising System (MAS), the online service through which they can track their degree progress, document consultations with their faculty advisers, and manage other transactions related to being a McCormick student. MAS can be accessed by visiting [mas.mccormick.northwestern.edu](http://mas.mccormick.northwestern.edu) (<https://mas.mccormick.northwestern.edu>). Questions about getting an audit updated, degree requirements, or general issues with MAS should be directed to [mccormick-school@northwestern.edu](mailto:mccormick-school@northwestern.edu).

## **Organizations for Engineering Students**

The McCormick Student Advisory Board is composed of representatives from each class in engineering and from approved McCormick organizations. It is the recognized representative body of undergraduate engineering students and as such serves as a link between the students and the faculty and administration. It encourages and coordinates the activities of engineering students and student groups.

Student groups at McCormick provide an important opportunity for undergraduates to develop leadership skills and create opportunities to network with faculty, staff, and professionals in the field. For information on McCormick student groups and honor societies visit: [www.mccormick.northwestern.edu/academics/undergraduate/student-groups/](http://www.mccormick.northwestern.edu/academics/undergraduate/student-groups/)

## **Artificial Intelligence**

[mccormick.northwestern.edu/computer-science/academics/undergraduate/](http://mccormick.northwestern.edu/computer-science/academics/undergraduate/) (<https://www.mccormick.northwestern.edu/computer-science/academics/undergraduate/>)

The Artificial Intelligence (AI) minor is designed for students across NU to gain deep expertise and experience in AI topics. It includes

electives across the breadth of AI, largely in CS, in courses where core understanding of the design and origin of AI (beyond application) is central. It is about the scientific ideas for how these technologies have been developed and how the tools are built, not just how they are applied.

The AI minor is open to undergraduate students in all Northwestern majors, except students completing a BS in Computer Science or the WCAS Computer Science major. Those students can simply complete the Artificial Intelligence concentration within their Computer Science major.

Students should begin the minor before the end of their first quarter of their junior year. To declare the Artificial Intelligence minor, students should submit the minor declaration form in **MAS (McCormick Advising System)** by the end of their junior year. At least 4 courses used for the minor may not be used (double-counted) to fulfill requirements in the student's 21-unit major program.

## Programs of Study

- Artificial Intelligence Minor (p. 149)

### Minor Prerequisites (4 units):

- Single Variable Calculus: Math 220-1
- Multivariable Calculus: Math 228-1 or 230-0
- Linear Algebra: Math 240 or GEN\_ENG 205-1
- Statistics: IEMS 201-0 or IEMS 303-0 or ELEC\_ENG 302-0 or STAT 210-0 or MATH 310-1

### Minor Requirements (8 units):

- Comp\_Sci 111 Fundamentals of Computer Programming 1
- Comp\_Sci 150 Fundamentals of Computer Programming 1.5
- Comp\_Sci 214 Data Structures & Algorithms
- Comp\_Sci 348 Artificial Intelligence
- Comp\_Sci 349 Machine Learning
- 3 upper level electives listed on Artificial Intelligence minor website (<https://www.mccormick.northwestern.edu/computer-science/academics/undergraduate/>).

## Artificial Intelligence Minor

Course	Title
<b>Prerequisites (4 units)</b>	
MATH 220-1	Single-Variable Differential Calculus
MATH 228-1 or MATH 230-1	Multivariable Differential Calculus for Engineering Multivariable Differential Calculus
MATH 240-0 or GEN_ENG 205-1	Linear Algebra Engineering Analysis I
<b>STATISTICS</b>	
<b>Minor Requirements (8 units)</b>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
3 upper level electives approved for the Artificial Intelligence minor.	

The list of upper level electives can be found on [Artificial Intelligence minor website](#)

## Applied Mathematics

See Engineering Sciences and Applied Mathematics (p. 184).

## Biomedical Engineering

[mccormick.northwestern.edu/biomedical](http://mccormick.northwestern.edu/biomedical)

Biomedical engineers solve problems in the life sciences and clinical medicine by applying engineering and mathematical techniques. This approach has been fruitful where a descriptive approach is no longer adequate for studying complex systems involved in the body's transport, regulation, and information processing. Equally important has been the development of devices used inside or outside the body to replace or supplement physiological functions and to enhance the quality of diagnosis and care.

The interplay among the physical sciences, engineering, biology, and the medical sciences takes many forms. The traditional study of complex systems—whether for power transmission, communications, or the operation and control of industrial processes—provided engineers with a number of concepts and techniques that proved valuable in analysis and design. These principles expressed in mathematical form are applicable to a wide range of phenomena, including those in biological processes. Information theory, statistics, and computer technology have opened new areas for exploration of sensory and central nervous activity as well as patient handling and diagnosis. Theories for feedback controls, transport processes, materials science, and mechanics have provided new insight into homeostatic physiological processes. Analysis of heat transfer, fluid flow, and chemical-process control in living organisms requires competence in both engineering and the life sciences. Current studies further understanding of many physiological processes, which in turn leads to improvements in clinical practice, diagnosis, and patient care.

Northwestern was among the first schools to recognize the value of a biomedical engineering background. Today the Department of Biomedical Engineering offers one of the largest and broadest programs in the country at both the undergraduate and graduate levels. Most students interested in the field follow its program, but other engineering departments also offer biomedical options.

The biomedical engineering program provides biomedical training that is quantitative, emphasizes problem solving, and treats phenomena from the molecular to the systems levels. The curriculum prepares students for careers in dentistry, medicine, or research or with healthcare corporations. Required courses in mathematics, engineering, and science establish a strong foundation on which the student builds a self-selected area of specialization.

A minimum of 21 course units in engineering design and engineering science, as well as substantial training in design, are required for a biomedical engineering degree.

Those seeking admission to dental or medical school should be familiar with the entrance requirements of schools to which they intend to apply. Many professional schools require courses in physics, organic, and/or physical chemistry and laboratory biology, in addition to courses required by the biomedical engineering program. These requirements may be satisfied by judicious use of electives.

## Biomedical Engineering Electives

Students seeking depth in one particular area of biomedical engineering may choose to focus their electives in one of the following three areas:

- Bioelectronics and Biosensors
- Biomaterials and regenerative medicine
- Biomechanics and rehabilitation
- Data Science
- Imaging and biophotonics

Alternately, students may choose a broader approach to the curriculum, selecting electives from all of these areas.

## Programs of Study

- Biomedical Engineering Degree (p. 152)

### **BMD\_ENG 101-0 Introduction to Biomedical Engineering (0 Unit)**

Information to 1) help students determine if BME is the right major for them and 2) learn how to make the most of their undergraduate experience. The field of biomedical engineering, career and research opportunities, ethics.

**BMD\_ENG 207-0 BME Lab: Experimental Design (0.5 Unit)** A laboratory course focusing on quantitative physiological measurements and analyses, instrument characterization, statistical design of experiments, and training in preparation and organization of laboratory notes and reports. Prerequisite: BMD\_ENG 220-0 or IEMS 303-0 or MECH\_ENG 359-0.

**BMD\_ENG 220-0 Introduction to Biomedical Statistics (1 Unit)** Basic statistical concepts presented with emphasis on their relevance to biological and medical investigations.

**BMD\_ENG 250-0 Thermodynamics (1 Unit)** Physical and chemical principles as applied to biological systems and medical devices. Topics include material balances, thermodynamics, solution chemistry, electrochemistry, surface chemistry, transport, and kinetics. Prerequisites: MATH 228-1; CHEM 132-0, CHEM 152-0, or CHEM 172-0.

**BMD\_ENG 270-0 Fluid Mechanics (1 Unit)** Fundamentals of fluid mechanics and their applications to biological systems. Prerequisites: BMD\_ENG 271-0, GEN\_ENG 205-4 and MATH 228-2.

**BMD\_ENG 271-0 Introduction to Biomechanics (1 Unit)** Analysis of stresses and deformations in solids. Problems in biomechanics, with emphasis on assumptions appropriate to modeling biological materials including bone, skin, muscle, and cell membranes. Prerequisite: GEN\_ENG 205-2.

**BMD\_ENG 304-0 Quantitative Systems Physiology (1 Unit)** Cardiovascular, respiratory, and immune systems, including physiology and pathophysiology. Case studies and a design team project. Integrated lab activities; no separate section. Prerequisite: Students must have taken PHYSICS 135-2; junior standing recommended.

**BMD\_ENG 305-0 Quantitative Systems Physiology (1 Unit)** Cellular mechanisms of and quantitative systems' approach to human renal, digestive, endocrine, and metabolic physiology. Integrated lab activities; no separate section. Prerequisite: junior standing recommended.

**BMD\_ENG 306-0 Quantitative Systems Physiology (1 Unit)** Functional/structural aspects of vertebrate nervous system. Neural biophysics. Integrated lab activities; no separate section.

Prerequisite: PHYSICS 135-2; junior standing recommended.

**BMD\_ENG 308-0 Biomedical Signals and Circuits (1.25 Units)** Time and frequency domain analysis: convolution representation, Fourier series, Fourier transforms, frequency response, filtering, sampling. Prerequisite: PHYSICS 135-2 or consent of instructor; BMD\_ENG 207-0 (can be taken concurrently).

**BMD\_ENG 309-0 Biomedical Systems Analysis (1.25 Units)** Introduction to linear systems analysis. Time and frequency domain techniques for analyzing linear systems, emphasizing their applications to biomedical systems. Python-based problem sets and a summative instrumentation and analysis lab project illustrate topics covered in class. Prerequisites: BMD\_ENG 207-0; BMD\_ENG 308-0; BMD\_ENG 220-0; GEN\_ENG 205-4.

### **BMD\_ENG 311-0 Computational Genomics (1 Unit)**

The course introduces state-of-the-art genomic sequencing technologies and computational modeling of high-throughput sequencing datasets. Through the course, students will learn how to apply these experimental and computational genomics technologies to study gene expression regulation underlying various biological processes, such as oncogenesis. Students will also apply computational and statistical skills, using linux and R/Matlab/Python.

Prerequisites: BMD\_ENG 220-0; BIOL\_SCI 201-0 or BIOL\_SCI 202-0.

### **BMD\_ENG 312-0 Biomedical Applications in Machine Learning (1 Unit)**

Supervised learning tasks such as regression and classification, Convolutional Neural Networks and image analysis techniques and hidden Markov models, unsupervised learning approaches such as clustering and dimensionality reduction will be applied to both structured (numerical) and image data. All models will be implemented in Python, either from scratch or using high-level libraries.

Prerequisites: BMD\_ENG 220-0, GEN\_ENG 205-1, MATH 220-1, MATH 220-2.

### **BMD\_ENG 313-0 Wearable Devices: From Sensing to Biomedical Inference (1 Unit)**

This course will review the challenges and opportunities associated with using wearable devices to infer biomedical information about individuals and populations. It will cover techniques from signal processing, machine learning, and artificial intelligence relevant to this objective. Content will be taught using a series of projects relevant to the quantification of human movement and rehabilitation medicine.

Prerequisites: BMD\_ENG 207-0 and BMD\_ENG 220-0.

### **BMD\_ENG 317-0 Biochemical Sensors (1 Unit)**

Theory, design, and applications of biochemical sensors used in medical diagnosis, biomedical research, and patient monitoring. Detection of biomolecules with optical, electrochemical, mass spectrometry and other sensors. Start-up translation of sensor technology.

Prerequisites: BIOL\_SCI 201-0; CHEM 215-1.

### **BMD\_ENG 323-0 Visual Engineering Science (1 Unit)**

Mammalian visual system. Physiological optics. Visual image representation and interpretation. Visual adaptation. Motion. Color vision. Prerequisite: PHYSICS 135-2.

### **BMD\_ENG 325-0 Introduction to Medical Imaging (1 Unit)**

Diagnostic X-rays; X-ray film and radiographic image; computed tomography; ultrasound. Prerequisites: Undergraduate students must have completed PHYSICS 135-3 and BMD\_ENG 309 (or equivalent course covering Fourier transform and other Signals concepts) to enroll in this course.

Prerequisites: Students must have completed PHYSICS 135-3 and knowledge of Fourier concepts.

### **BMD\_ENG 327-0 Magnetic Resonance Imaging (1 Unit)**

Nuclear magnetic resonance; two-dimensional Fourier transform, spinecho and gradientecho imaging; gradient and RF hardware. Prerequisite: PHYSICS 135-3.

#### **BMD\_ENG 333-0 Modern Optical Microscopy & Imaging (1 Unit)**

Rigorous introduction to principles, current trends, emerging technologies, and biomedical applications of modern optical microscopy. Prerequisites: BMD\_ENG 220-0, GEN\_ENG 205-4, PHYSICS 135-3.

#### **BMD\_ENG 340-0 Pharmaceutical Engineering: From Discovery to Therapeutics (1 Unit)**

This course will take students through the process of drug development from initial innovative concept and identified medical need, to proof of efficacy, clinical trials, and translation to 'big pharma'. Professor Moskal will draw upon his experience from academia and industry to chart out each critical step of drug development; additional industry experts will present guest lectures.

Prerequisites: CHEM 215-1 or be BME MS/PhD student to enroll in this class.

#### **BMD\_ENG 343-0 Biomaterials and Medical Devices (1 Unit)**

Structure-property relationships for biomaterials. Metal, ceramic, and polymeric implant materials and their implant applications. Interactions of materials with the body.

Prerequisites: BIOL\_SCI 201-0, BIOL\_SCI 202-0 (can be taken concurrently), CHEM 215-1, MAT\_SCI 201-0.

#### **BMD\_ENG 344-0 Biological Performance of Materials (1 Unit)**

Structure-property relationships of materials, physical chemistry of surfaces and interfaces, materials-tissue interactions, applications to the selection and design of materials for medical implants and devices.

Prerequisites: BIOL\_SCI 201-0, BIOL\_SCI 202-0 (can be taken concurrently), CHEM 215-1, MAT\_SCI 201-0.

#### **BMD\_ENG 346-0 Tissue Engineering (1 Unit)**

In vivo molecular, cellular, and organ engineering, with emphasis on the foundations, techniques, experiments, and clinical applications of tissue engineering.

Prerequisites: BIOL\_SCI 201-0, BIOL\_SCI 202-0 (can be taken concurrently), CHEM 215-1.

#### **BMD\_ENG 347-0 Foundations of Regenerative Engineering (1 Unit)**

Embryonic development, stem cell engineering, somatic regeneration, genome and transcriptome modifications, cell and tissue-level regenerative engineering.

Prerequisites: BIOL\_SCI 201-0 or BIOL\_SCI 202-0.

#### **BMD\_ENG 348-0 Applications of Regenerative Engineering (1 Unit)**

Mechanisms of human disease, development and application of molecular, cellular, and tissue-level regenerative engineering strategies to selected human disorders, including neurodegenerative disorders, stroke, cystic fibrosis, cirrhosis, diabetes, muscular degenerative disorders, and skin injury.

Prerequisite: BIOL\_SCI 201-0 or BIOL\_SCI 202-0.

#### **BMD\_ENG 353-0 Bioelectronics (1 Unit)**

Development and design of sensors, stimulators, and their medical devices for biointegrated electronics. Materials design and fabrication of passive and active components for sensitive, multimodal, and robust wearable and implantable devices.

#### **BMD\_ENG 354-0 Bioelectronics Lab (1 Unit)**

Laboratories focused on the practical implementation, instrumentation, and fabrication of wearables and skinsensing. Applications range from vital sign monitoring to rehabilitation.

Prerequisites: BMD\_ENG 353 or MAT\_SCI 353. Concurrent enrollment is acceptable.

#### **BMD\_ENG 365-0 Control of Human Limbs and Their Artificial Replacements (1 Unit)**

Human movement, biomechanics, skeletal and muscular anatomy, comparative anatomy, muscle physiology, and locomotion. Engineering design of artificial limbs.

Prerequisite: senior standing with engineering or physical science background.

#### **BMD\_ENG 366-0 Biomechanics of Movement (1 Unit)**

Engineering mechanics applied to analyze human movement, including models of muscle and tendon, kinematics of joints, and dynamics of multi-joint movement. Applications in sports, rehabilitation, and orthopedics.

Prerequisite: BMD\_ENG 271-0.

#### **BMD\_ENG 371-0 Mechanics of Biological Tissue (1 Unit)**

Stress and strain for small and large deformations. Nonlinear elastic, viscoelastic, pseudo-elastic, and biphasic models.

Prerequisites: BMD\_ENG 271-0; GEN\_ENG 205-3; GEN\_ENG 205-4.

#### **BMD\_ENG 377-0 Intermediate Fluid Mechanics (1 Unit)**

Fundamental concepts of fluid dynamics. Kinematics, mass and momentum balances, constitutive relations. Navier-Stokes equations and methods of solution. Sealing techniques.

Prerequisite: BMD\_ENG 270-0 or consent of instructor.

#### **BMD\_ENG 378-0 Transport Fundamentals (1 Unit)**

Fundamental and biomedical applications of diffusive and convective heat and mass transfer. Prerequisites: BMD\_ENG 270-0; MATH 228-1; BMD\_ENG 377-0 recommended.

#### **BMD\_ENG 380-0 Medical Devices, Disease & Global Health (1 Unit)**

Health systems and technologies to address health problems of the world's underserved populations, with special emphasis on developing countries.

#### **BMD\_ENG 388-SA Health Systems Engineering (1 Unit)**

Introduction to health systems in the context of disease burden with special emphasis in developing countries. We examine healthcare systems, financing, data and analytics. The course focuses primarily on health-related issues confronting South Africa and the associated social and economic impact.

Prerequisite: consent of instructor.

#### **BMD\_ENG 389-SA Health Technology Management (1 Unit)**

This course provides an introduction to formal concepts and methodologies used in support of health technology planning, assessment and adoption - and related decision making - as part of cost-effective healthcare delivery. Open to participants in the Global Health Technologies Program only.

#### **BMD\_ENG 390-1 Biomedical Engineering Design (1 Unit)**

Open-ended team-designed projects in the medical devices arena. Systems approach requiring design strategy and concepts, including reliability, safety, ethics, economic analysis, marketing, FDA regulations, and patents. Written and oral reports. Pre-Requisites: BMD\_ENG 207-0, BMD\_ENG 220-0, BMD\_ENG 270-0, BMD\_ENG 308-0, BMD\_ENG 309-0, COMP\_SCI 150 and two of the following: BMD\_ENG 250-0, BMD\_ENG 271-0, MAT\_SCI 201-0.

#### **BMD\_ENG 390-2 Biomedical Engineering Design (1 Unit)**

Development of a design project initiated during the previous quarter. Prerequisite: BMD\_ENG 390-1.

#### **BMD\_ENG 390-3 Biomedical Engineering Design (1 Unit)**

Continuation of a design project; independent study. May not be repeated for credit.

Prerequisites: BMD\_ENG 390-1 or BMD\_ENG 390-2; consent of instructor.

#### **BMD\_ENG 391-SA HealthCare Techology Innovation and Design (1 Unit)**

Principles and practice of medical device design for the developing world. Evaluation of user needs in the environment of under-resourced segments of South African health care system. Validation and verification of engineering design solutions. Open to participants in the Global Health Technologies Program only.

**BMD\_ENG 395-0 Topics in Biomedical Engineering (1 Unit)** Special Topics in Biomedical Engineering.

**BMD\_ENG 396-0 Special Topics (0.5 Unit)**

Special Topics in Biomedical Engineering, Laboratory emphasis.

**BMD\_ENG 397-0 Special Topics in Biomedical Engineering (0.5-1 Unit)**

Special Topics in Biomedical Engineering, Laboratory emphasis.

**BMD\_ENG 398-0 Special Topics in Biomedical Engineering (0.34 Unit)**

Special Topics in Biomedical Engineering, Laboratory emphasis.

**BMD\_ENG 399-0 Projects (1 Unit)** SEE DEPT FOR SECTION AND PERMISSION NUMBERS.

## Biomedical Engineering Degree

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### Requirements (48 units)

#### Core Courses (27 units)<sup>1</sup>

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:</b>	
PHYSICS 135-2 General Physics	
BIOL_SCI 201-0 Molecular Biology	
CHEM 131-0 Fundamentals of Chemistry I & CHEM 132-0 and Fundamentals of Chemistry II	
or CHEM 151-0 General Chemistry I & CHEM 152-0 and General Chemistry II	
or CHEM 171-0 Advanced General Inorganic Chemistry & CHEM 172-0 and Advanced General Physical Chemistry	
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

#### Major Program (21 units)

Course	Title
<b>Basic Engineering (5 courses)</b>	
Take all of these courses:	
BMD_ENG 220-0	Introduction to Biomedical Statistics
BMD_ENG 270-0	Fluid Mechanics
or MECH_ENG 241-0	Fluid Mechanics I
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
Take 2 of the following 3 courses:	
BMD_ENG 250-0	Thermodynamics
or MECH_ENG 222-0	Thermodynamics & Statistical Mechanics - I
BMD_ENG 271-0	Introduction to Biomechanics
MAT_SCI 201-0	Introduction to Materials Science and Engineering Principles
<b>Core courses (9 courses + 1 zero-credit seminar)</b>	
BMD_ENG 101-0	Introduction to Biomedical Engineering (noncredit)
CHEM 215-1	Organic Chemistry I
or PHYSICS 135-3	General Physics

BMD_ENG 207-0	BME Lab: Experimental Design
BMD_ENG 304-0	Quantitative Systems Physiology
BMD_ENG 305-0	Quantitative Systems Physiology
BMD_ENG 306-0	Quantitative Systems Physiology
BMD_ENG 308-0	Biomedical Signals and Circuits
BMD_ENG 309-0	Biomedical Systems Analysis
BMD_ENG 378-0	Transport Fundamentals
BMD_ENG 390-1	Biomedical Engineering Design
<b>Technical electives (7 units)</b>	
Take 7 units from the approved list below. <sup>2</sup>	
Two units must be 300-level BME courses with 100% engineering topics.	
Three total units must be 100% engineering topics (the two above courses plus one more).	
Only 1 unit may be a graded, independent research course.	
100-level courses are not permitted.	
In addition to the courses listed below, CHEM 215-1, PHYS 135-3, BMD_ENG 250-0, BMD_ENG 271-0, and MAT_SCI 201-0 may also be used as technical elective courses as long as they are not used as core courses and as long as the rules above are satisfied.	
Three, 0.34 unit basic science labs may also be combined and counted as a technical elective. There is no limit to the number of lab courses that can be used.	
BIOL_SCI 202-0	Cell Biology
BIOL_SCI 301-0	Principles of Biochemistry
CHEM 215-2	Organic Chemistry II
CHEM 215-3	Organic Chemistry III
PHYSICS 357-0	Optics Laboratory
BMD_ENG 311-0	Computational Genomics
BMD_ENG 312-0	Biomedical Applications in Machine Learning
BMD_ENG 313-0	Wearable Devices: From Sensing to Biomedical Inference
BMD_ENG 317-0	Biochemical Sensors
BMD_ENG 325-0	Introduction to Medical Imaging
BMD_ENG 327-0	Magnetic Resonance Imaging
BMD_ENG 333-0	Modern Optical Microscopy & Imaging
BMD_ENG 340-0	Pharmaceutical Engineering: From Discovery to Therapeutics
BMD_ENG 343-0	Biomaterials and Medical Devices
BMD_ENG 344-0	Biological Performance of Materials
BMD_ENG 346-0	Tissue Engineering
BMD_ENG 347-0	Foundations of Regenerative Engineering
BMD_ENG 348-0	Applications of Regenerative Engineering
BMD_ENG 353-0	Bioelectronics
BMD_ENG 354-0	Bioelectronics Lab
BMD_ENG 365-0	Control of Human Limbs and Their Artificial Replacements
BMD_ENG 366-0	Biomechanics of Movement
BMD_ENG 377-0	Intermediate Fluid Mechanics
BMD_ENG 380-0	Medical Devices, Disease & Global Health
BMD_ENG 388-SA	Health Systems Engineering
BMD_ENG 389-SA	Health Technology Management
BMD_ENG 390-3	Biomedical Engineering Design
BMD_ENG 499-0	Projects
CHEM_ENG 361-0	Introduction to Polymers
CHEM_ENG 376-0	Principles of Synthetic Biology
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems
CIV_ENV 327-0	Finite Element Methods in Mechanics

COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 217-0	Data Management & Information Processing
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 349-0	Machine Learning
DSGN 240-0	Introduction to Solid Modeling: Solidworks (0.5 unit)
DSGN 321-0	Advanced Solid Modeling (0.5 unit)
ELEC_ENG 332-0	Introduction to Computer Vision
ELEC_ENG 335-0	Deep Learning Foundations from Scratch
ELEC_ENG 360-0	Introduction to Feedback Systems
ELEC_ENG 379-0	Lasers and Coherent Optics
ELEC_ENG 382-0	Photonic Information Processing
ES_APPM 370-1	Introduction to Computational Neuroscience
IEMS 385-0	Introduction to Health Systems Management
MAT_SCI 318-0	Materials Selection
MAT_SCI 360-0	Introduction to Electron Microscopy
MECH_ENG 301-0	Introduction to Robotics Laboratory
MECH_ENG 314-0	Machine Dynamics
MECH_ENG 315-0	Theory of Machines: Design of Elements
MECH_ENG 333-0	Introduction to Mechatronics
MECH_ENG 362-0	Stress Analysis
MECH_ENG 382-0	Experiments in Micro- and Nano Science and Engineering
MECH_ENG 390-0	Intro to Dynamic Systems

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> The approved list of courses can be found on the BME Curriculum webpage (<https://www.mccormick.northwestern.edu/biomedical/academics/undergraduate/curriculum.html>) and in the BME Undergraduate handbook.

## Chemical Engineering

[mccormick.northwestern.edu/chemical-biological](http://mccormick.northwestern.edu/chemical-biological)

Chemical engineering impacts nearly every aspect of our daily lives. Chemical engineers harness the power of chemistry, physics, biology, and mathematics to develop processes that transform raw materials into valuable products for a multitude of societal applications. Today, chemical engineers invent new biotechnologies and devise processes to produce biologics and pharmaceuticals at the scales required to combat diseases at affordable costs, such as the rapid deployment of vaccines during the COVID-19 pandemic. They produce the chemicals and materials that enable the microprocessors, which power new artificial intelligence technologies and large-scale photovoltaic installations. They are responsible for producing the fertilizers needed to feed the world's population and the technologies that clean up air, water, and plastic pollution. With suitable processing methods, they help extend the useful life of food, maintain nutritional levels for longer periods, and develop new food sources. Chemical engineers help craft national and regional policies that impacts business owners and consumers. They assist in drafting guidelines for sustainable development, while preserving natural resources and preventing environmental degradation. They often provide reality checks for policymakers by quantifying the possible and guiding the decision-making process. Chemical engineers are at the forefront of developing new technologies that will enable a more sustainable future – it's a career with nearly unlimited potential to make a positive impact on the world.

As a Chemical Engineer, you will receive a unique education. The fundamental courses in thermodynamics, separations, kinetics, and transport will give you an appreciation for how molecules behave and interact with their environments, including other molecules and energy. The design, laboratory, and controls courses provide an opportunity to apply your knowledge of these interactions to develop efficient larger-scale systems. Your perspective will bridge the molecular-scale thinking of physicist and chemists with the systems-level thinking of economists, social scientists, and political scientists.

To prepare for the many career paths that chemical engineers may undertake, you will develop a comprehension of physical, chemical, biological, and engineering principles. At Northwestern ChemE, we are committed to fostering an inclusive and supportive environment where all students can thrive. Our program provides broad fundamental training with a curriculum that encourages its graduates to think creatively and flexibly. We celebrate diverse perspectives and encourage collaboration to drive innovation. Graduates are equally prepared to pursue advanced studies, tackle operation problems in the chemicals, pharmaceuticals, environmental, and process industries, or contribute to the next entrepreneurial venture set to change the world. The program prepares you to plan, design, and operate new processes, contribute to the development of new chemical products, and develop your potential for managerial responsibility in highly technical industrial enterprises.

## Areas of Specialization

Technical electives can be crafted to develop a deeper appreciation of technical aspects of selected areas in chemical engineering. Choose one of following six optional areas of specialization, or plan an alternate program with an adviser:

- Bioengineering
- Chemical process engineering
- Design
- Environmental engineering and sustainability
- Nanotechnology and molecular engineering
- Polymer science and engineering

## Laboratories

Visualization of chemical engineering principles is an essential part of learning. Students are engaged in the Undergraduate Chemical Engineering Laboratory that provides facilities for exploring firsthand the quantitative experimental implications of fundamental laws in their application to practical problems of heat transfer, distillation, reaction engineering, and other basic operations. Students practice teamwork and team management in this laboratory setting as well as in the Senior Process Design. In addition, weekly written and oral reports provide opportunities to practice written and oral communication skills, on top of similar though less extensive opportunities in other courses. A computing laboratory is used in a variety of courses.

## Programs of Study

- Chemical Engineering Degree (p. 155)
- Biotechnology and Biochemical Engineering Minor (p. 156)

**CHEM\_ENG 101-0 Getting to Know Chemical Engineering (0 Unit)** This survey course is an overview of the discipline of chemical engineering, and its undergraduate program at Northwestern. It is primarily targeted to first-years who are considering the major. We will discuss the most recent

areas of research, career paths after graduation, and engineering ethics. Most course sessions will involve external speakers.

**CHEM\_ENG 190-0 Engineering of Chemical and Biological Processes (1 Unit)** Survey of engineering principles as they are applied to processes involving chemical and biological transformations. Examples from the chemical, pharmaceutical, biotechnology, food processing, electronics, and other industries. Impact of economics, ethics, and other nontechnical constraints.

**CHEM\_ENG 210-0 Analysis of Chemical Process Systems (1 Unit)**

Introduction to process systems. Material balances and stoichiometry. Analysis of process system flow sheets. Introduction to departmental computing facilities. Basic numerical analysis. Prerequisites: CHEM 132-0, CHEM 152-0, or CHEM 172-0; GEN\_ENG 205-3 (may be taken concurrently).

**CHEM\_ENG 211-0 Thermodynamics (1 Unit)** The first and second laws of thermodynamics. Entropy and equilibrium. Material and energy balances. Equations of state and properties of fluids. Solutions, phase equilibria, and chemical reactions. Prerequisite: CHEM\_ENG 210-0.

**CHEM\_ENG 212-0 Phase Equilibrium and Staged Separations (1 Unit)** Thermodynamic models of mixtures and phase equilibrium. Analysis and design of staged separation processes such as distillation, absorption, stripping, and extraction. Prerequisites: CHEM\_ENG 210-0, CHEM\_ENG 211-0.

**CHEM\_ENG 275-0 Molecular & Cell Biology for Engineers (1 Unit)**

Introduction to cell and molecular biology concepts that provide the foundation for modern biotechnology and bioengineering. Prerequisite: CHEM 132-0, CHEM 152-0, or CHEM 172-0.

**CHEM\_ENG 307-0 Kinetics and Reactor Engineering (1 Unit)**

Chemical reaction kinetics with application to the design of chemical reactors.

Prerequisites: CHEM\_ENG 210-0, CHEM\_ENG 211-0, CHEM\_ENG 321-0, CHEM\_ENG 322-0.

**CHEM\_ENG 312-0 Probability and Statistics for Chemical Engineering (1 Unit)**

Introduction to probability theory and statistical methods necessary for analyzing the behavior of processes and experiments. Statistical tests for detecting significant changes in process parameters.

Prerequisites: MATH 220-1, MATH 220-2, MATH 228-1, & MATH 228-2 (formerly listed as MATH 220-0, MATH 224-0, MATH 230-0, & MATH 234-0), or ES\_APPM 252-1 & ES\_APPM 252-2.

**CHEM\_ENG 321-0 Fluid Mechanics (1 Unit)**

Derivation and applications of continuity and Navier-Stokes equations. Macroscopic mass, momentum, and energy balance. Dimensional analysis: friction factors in pipes and packed beds; drag coefficients. Prerequisites: completion of mathematics requirements with no grades of D; GEN\_ENG 205-4 (C- or better).

**CHEM\_ENG 322-0 Heat Transfer (1 Unit)**

The differential equations of energy transport. Solutions for various applications.

Prerequisites: completion of mathematics requirements with no grades of D; GEN\_ENG 205-4 (C- or better); CHEM\_ENG 321-0 recommended.

**CHEM\_ENG 323-0 Mass Transfer (1 Unit)**

Diffusion and rate concepts; application to distillation, extraction, absorption, humidification, drying.

Prerequisites: CHEM\_ENG 321-0, CHEM\_ENG 322-0.

**CHEM\_ENG 330-0 Molecular Engineering and Statistical Mechanics (1 Unit)**

Basic statistical mechanics. Applications to thermodynamics, kinetics, and transport of various engineering systems, including frontier areas of chemical and biological engineering. Not open to students who have taken CHEM\_ENG 406-0, CHEM 342-3, or PHYSICS 332-0.

Prerequisite: CHEM\_ENG 211-0 or another thermodynamics course; courses in probability and statistics, heat transfer, or other transport recommended.

**CHEM\_ENG 341-0 Dynamics and Control of Chemical and Biological Processes (1 Unit)**

Dynamic behavior of chemical process components. Feedback control principles.

Prerequisites: CHEM\_ENG 307-0; senior standing.

**CHEM\_ENG 342-0 Chemical Engineering Laboratory (1 Unit)**

Operation and control of process equipment for the determination of operating data. Analysis and written presentation of results.

Prerequisites: CHEM\_ENG 212-0, CHEM\_ENG 307-0, CHEM\_ENG 321-0, CHEM\_ENG 322-0, CHEM\_ENG 323-0.

**CHEM\_ENG 345-0 Process Optimization for Energy and Sustainability (1 Unit)**

Modern techniques and application to the design and operation of chemical process systems. Steady-state and dynamic methods.

Experimental search for the optimum.

Prerequisite: junior standing.

**CHEM\_ENG 351-0 Process Economics, Design, & Evaluation (1 Unit)**

Preliminary design of industrial processes for the production of chemical and allied products by the application of the engineering sciences and economics.

Prerequisites: CHEM\_ENG 212-0, CHEM\_ENG 307-0, CHEM\_ENG 321-0, CHEM\_ENG 322-0, CHEM\_ENG 323-0.

**CHEM\_ENG 352-0 Chemical Engineering Design Projects (1 Unit)**

Design of chemical and process plants applying the principles of unit operations, thermodynamics, reaction kinetics, and economics.

Mechanical design and selection of chemical process equipment.

Prerequisite: CHEM\_ENG 351-0.

**CHEM\_ENG 355-0 Chemical Product Design (1 Unit)**

Properties and selection of chemicals for products from single-molecule pharmaceuticals to devices to manufactured products such as food and consumer goods.

Prerequisite: junior standing.

**CHEM\_ENG 361-0 Introduction to Polymers (1 Unit)**

Polymerization mechanisms and their relation to molecular structure, polymerization processes, and the mechanical properties of polymers, especially flow behavior.

Prerequisites: CHEM\_ENG 211-0 or other thermodynamics course; CHEM 210-1.

**CHEM\_ENG 364-0 Chemical Processing and the Environment (1 Unit)**

Application of chemical engineering fundamentals to environmental problems. Chemistry and mechanisms, chemical reaction and rate, and transport emphasized. Risk assessment and analysis revealed through case studies.

Prerequisites: CHEM\_ENG 212-0, CHEM\_ENG 307-0.

**CHEM\_ENG 365-0 Sustainability, Technology, and Society (1 Unit)**

Technical discussion of selected topics related to sustainability, sustainable development, global climate changes, natural and renewable resources and utilization, industrial ecology, eco-efficiency, technology related to sustainability such as biofuel, electrification of transportation, and water purification, and role of policy and business risk assessment.

Prerequisites: junior standing in science or engineering; familiarity with process system analysis, energy and material balances (such as found in CHEM\_ENG 210-0 or CIV\_ENV 260-0).

#### **CHEM\_ENG 367-0 Quantitative Methods in Life Cycle Analysis (1 Unit)**

Lifecycle analysis (LCA) framework for environmental assessment of technology systems, focusing on modeling methods for systems mass and energy flows, process and input-output-based systems inventories, environmental impact analysis, and methods for robust engineering decisions. MECH\_ENG 367-0 is taught with CHEM\_ENG 367-0; may not receive credit for both courses.

#### **CHEM\_ENG 372-0 Bionanotechnology (1 Unit)**

Physical biology of the cell and its implications for nanotechnology, with a focus on the quantitative description of sizes, shapes, times, and energies at the nanoscale.

Prerequisite: MATH 228-1 (formerly listed as MATH 230-0).

#### **CHEM\_ENG 373-0 Biotechnology and Global Health (1 Unit)**

Recent advances in synthetic biology and genetic, metabolic, and tissue engineering. Design, development, and commercialization of healthcare technologies for countries in the developing world and the challenges of deploying preventative, diagnostic, and therapeutic products in these settings.

#### **CHEM\_ENG 375-0 Biochemical Engineering (1 Unit)**

Modern biochemical engineering. Life sciences: microbiology, biochemistry, and molecular genetics. Metabolic stoichiometry, energetics, growth kinetics, transport phenomena in bioreactors, and product recovery.

Prerequisite: CHEM\_ENG 307-0, CHEM\_ENG 323-0, or consent of instructor.

#### **CHEM\_ENG 376-0 Principles of Synthetic Biology (1 Unit)**

Overview of synthetic biology's foundations in the natural sciences and engineering and its applications in medicine, biotechnology, and green chemistry. How engineering driven approaches may be used to accelerate design-build-test loops required for reprogramming existing biological systems and constructing new ones.

Prerequisite: CHEM\_ENG 275-0 or BIOL SCI 201-0 or BIOL SCI 202-0 (formerly BIOL SCI 215-0 or BIOL SCI 219-0).

#### **CHEM\_ENG 377-0 Bioseparations (1 Unit)**

Downstream process in biotechnology. Separation and lysis of cells. Recovery of organelles and proteins. Protein separation and purification. Prerequisites: CHEM\_ENG 323-0 (may be taken concurrently); CHEM\_ENG 275-0 or BIOL SCI 201-0 or BIOL SCI 202-0 (formerly BIOL SCI 215-0 or BIOL SCI 219-0).

#### **CHEM\_ENG 378-0 Deconstructing Synthetic Biology – Biotechnology**

##### **Case Studies Across Scales (1 Unit)**

Synthetic biology uses concepts across STEM fields to reuse, repurpose and redesign biological systems to solve important global challenges. Here, we break down how synthetic biology solutions integrate concepts across five spatiotemporal scales—molecular, network, cell/cell-free systems, biological communities and societal—using case studies in sustainability, biomanufacturing and human health. The deconstruction approach enables students to better tackle scientific challenges.

#### **CHEM\_ENG 379-0 Computational Biology: Analysis and Design of Living Systems (1 Unit)**

This course provides an introduction to fundamental principles and methods for computational and mathematical analysis of natural and engineered biological systems. Emphasis is placed upon understanding and designing biological systems based upon conceptual framings

including multi-scale networks, dynamic control, genetic circuits, and biological programs.

#### **CHEM\_ENG 381-0 Practical Biological Imaging (1 Unit)**

Theory and practice of biological microscopy in a lab setting; image acquisition, analysis, and the ethics of image manipulation.

#### **CHEM\_ENG 382-0 Regulatory Sciences in Biotechnology (1 Unit)**

Course on topics at the intersection of science, engineering, and biotech regulatory compliance. Federal regulations for drug product development; regulatory compliance processes and organizational structure; interface between biotechnology processes and regulatory sciences; global harmonization of regulations; regulatory documentation.

#### **CHEM\_ENG 395-0 Special Topics in Chemical Engineering (1 Unit)**

Topics suggested by students or faculty and approved by the department.

#### **CHEM\_ENG 399-0 Projects (1 Unit)** Supervised investigation of a chemical engineering problem with submission of a final report.

## **Chemical Engineering Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## **Requirements (48 units)**

### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:<sup>2</sup></b>	
PHYSICS 135-2	General Physics
CHEM 131-0 & CHEM 132-0 or CHEM 151-0 & CHEM 152-0 or CHEM 171-0 & CHEM 172-0	Fundamentals of Chemistry I and Fundamentals of Chemistry II  General Chemistry I and General Chemistry II  Advanced General Inorganic Chemistry and Advanced General Physical Chemistry
CHEM_ENG 275-0 or BIOL SCI 201-0 or BIOL SCI 202-0	Molecular & Cell Biology for Engineers <sup>3</sup>  Molecular Biology  Cell Biology
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

### **Major Program (21 units)**

Course	Title
<b>16 required courses</b>	
CHEM 215-1 & CHEM 215-2	Organic Chemistry I and Organic Chemistry II
MAT SCI 301-0	Introduction to Materials Science and Engineering Principles
COMP SCI 150-0	Fundamentals of Computer Programming 1.5
CHEM_ENG 210-0	Analysis of Chemical Process Systems
CHEM_ENG 211-0	Thermodynamics
CHEM_ENG 212-0	Phase Equilibrium and Staged Separations
CHEM_ENG 307-0	Kinetics and Reactor Engineering
CHEM_ENG 312-0 or IEMS 303-0	Probability and Statistics for Chemical Engineering Statistics
CHEM_ENG 321-0	Fluid Mechanics
CHEM_ENG 322-0	Heat Transfer

CHEM_ENG 323-0	Mass Transfer	BIOL_SCI 232-0	Molecular and Cellular Processes Laboratory
CHEM_ENG 341-0	Dynamics and Control of Chemical and Biological Processes	& BIOL_SCI 233-0	and Genetics and Molecular Processes Laboratory
CHEM_ENG 342-0	Chemical Engineering Laboratory	& BIOL_SCI 234-0	and Investigative Laboratory
CHEM_ENG 351-0	Process Economics, Design, & Evaluation	3 electives providing opportunity for greater depth in both fundamental biology and engineering applications:	
CHEM_ENG 352-0	Chemical Engineering Design Projects	1 course from Core Electives (p. 156) 2 courses from Extended Electives (p. 157)	

**5 technical elective courses**

- 2 advanced chemical engineering courses from an approved list available from the department
- 1 engineering course from an approved list available from the department or 1 unit of independent study
- 1 advanced science or mathematics course from an approved list available from the department
- 1 engineering, advanced science, or mathematics course from an approved list available from the department

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-2 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. Concurrent registration with the associated labs (PHYSICS 136-2 General Physics Laboratory or PHYSICS 126-2 Physics Laboratory for ISP) is required. PHYSICS 135-3 General Physics is a required basic science course for students entering before Fall 2023 and is part of the approved technical elective list for students entering after Fall 2023 and who are using the current catalog. PHYSICS 135-3 General Physics may also be substituted by PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics.

<sup>3</sup> BIOL\_SCI 201-0 Molecular Biology or BIOL\_SCI 202-0 Cell Biology may be substituted for CHEM\_ENG 275-0 Molecular & Cell Biology for Engineers. Exemptions from this one unit of biology coursework are NOT granted for students placing out of BIOL\_SCI 201-0 Molecular Biology through the Biological Sciences Department's placement test. These students may use CHEM\_ENG 275-0 Molecular & Cell Biology for Engineers or BIOL\_SCI 202-0 Cell Biology to complete the required biology unit.

## Biotechnology and Biochemical Engineering Minor

This minor provides specific training for McCormick students interested in industries that create and manufacture bio-based fuels and industrial chemicals, pharmaceuticals, biomaterials, and agents for gene and cell therapies or for those desiring in-depth preparation for future graduate study in biotechnology research.

Course	Title
<b>Requirements (10 units)</b>	
6 courses in biological science and biochemical engineering:	
BIOL_SCI 201-0	Molecular Biology <sup>1,2</sup>
BIOL_SCI 202-0	Cell Biology <sup>1,2</sup>
BIOL_SCI 203-0	Genetics and Evolution <sup>2</sup>
BIOL_SCI 301-0	Principles of Biochemistry
CHEM_ENG 375-0	Biochemical Engineering
CHEM_ENG 377-0	Bioseparations
Laboratory experience:	
The complete series of 0.34-unit laboratories or one unit of 399 independent study in an approved laboratory <sup>3</sup>	

- <sup>1</sup> CHEM\_ENG 275-0 Molecular & Cell Biology for Engineers may substitute for either one
- <sup>2</sup> The Biotech Minor requires 3 units of Biology coursework. Exemptions or course reductions are NOT granted for students taking the Biological Sciences Department placement test, and who test out of and skip BIOL\_SCI 201-0 Molecular Biology. These students may complete BIOL\_SCI 202-0 Cell Biology and BIOL\_SCI 203-0 Genetics and Evolution and petition to use an upper level Biology course to complete the required 3 units of Biology coursework.
- <sup>3</sup> Biological Science laboratories are now connected to the intro sequence courses, and registration in the lab is required. Students who are transferring credit from a previous institution where there is no coupled lab, or who do not have one full unit of laboratory credit, may use a previously approved independent study. Any student may choose to substitute a previously approved independent study unit in place of the three laboratory courses.
- A minimum GPA of 2.0 is required in courses in the minor.
  - A BA or BS degree from Northwestern must be completed.
  - No more than 6 units may be double-counted to fulfill requirements in the major program for catalog years 2022 to present. For catalog years 2021 and earlier, no more than 5 units may be double-counted to fulfill requirements in the major program.
  - A maximum of 2 units not offered by the department may be taken P/N for the minor. Students must also comply with departmental and McCormick P/N regulations for courses that are double-counted toward requirements in the minor and major programs.
  - Students not majoring in chemical engineering should take the Biological Sciences intro sequence BIOL\_SCI 201-0 Molecular Biology, BIOL\_SCI 202-0 Cell Biology, BIOL\_SCI 203-0 Genetics and Evolution, and BIOL\_SCI 301-0 Principles of Biochemistry before CHEM\_ENG 375-0 Biochemical Engineering and CHEM\_ENG 377-0 Bioseparations. They should also take CHEM 342-1 Thermodynamics and the recommended BIOL\_SCI 315-0 Advanced Cell Biology to prepare for CHEM\_ENG 375-0 Biochemical Engineering and CHEM\_ENG 377-0 Bioseparations.
  - Students must submit an up to date minor declaration form in MAS (McCormick Advising System) (<https://mas.mccormick.northwestern.edu/>) before the beginning of their final quarter as undergraduates. Petitions for counting the independent study units are also completed in MAS.
- ## Minor Electives
- ### Core Electives
- | Course         | Title   |
|----------------|---|
| CHEM_ENG 372-0 | Bionanotechnology   |
| CHEM_ENG 373-0 | Biotechnology and Global Health   |
| CHEM_ENG 376-0 | Principles of Synthetic Biology   |
| CHEM_ENG 378-0 | Deconstructing Synthetic Biology – Biotechnology Case Studies Across Scales |

CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems
CHEM_ENG 382-0	Regulatory Sciences in Biotechnology
CHEM_ENG 470-0	Molecular Folding and Function
CHEM_ENG 478-0	Advances in Biotechnology
CHEM_ENG 395-0	Special Topics in Chemical Engineering (must be approved by petition)

## Extended Electives

Course	Title
CHEM_ENG 372-0	Bionanotechnology
CHEM_ENG 373-0	Biotechnology and Global Health
CHEM_ENG 376-0	Principles of Synthetic Biology
CHEM_ENG 378-0	Deconstructing Synthetic Biology – Biotechnology Case Studies Across Scales
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems
CHEM_ENG 382-0	Regulatory Sciences in Biotechnology
CHEM_ENG 470-0	Molecular Folding and Function
CHEM_ENG 478-0	Advances in Biotechnology
CHEM_ENG 395-0	Special Topics in Chemical Engineering (must be approved by petition)
BIOL SCI 315-0	Advanced Cell Biology
BIOL SCI 323-0	Bioinformatics: Sequence and Structure Analysis
BIOL SCI 328-0	Microbiology
BIOL SCI 332-0	Conservation Genetics
BIOL SCI 341-0	Population Genetics
BIOL SCI 355-0	Immunobiology
BIOL SCI 361-0	Protein Structure and Function
BIOL SCI 363-0	Biophysics
BIOL SCI 378-0	Functional Genomics
BIOL SCI 380-0	Biology of Cancer
BIOL SCI 390-0	Molecular Biology of Genome Editing and Engineering
BIOL SCI 395-0	Molecular Genetics
BMD_ENG 304-0	Quantitative Systems Physiology (Formerly BMD_ENG 302)
BMD_ENG 317-0	Biochemical Sensors
BMD_ENG 340-0	Pharmaceutical Engineering: From Discovery to Therapeutics
BMD_ENG 343-0	Biomaterials and Medical Devices
BMD_ENG 344-0	Biological Performance of Materials
BMD_ENG 346-0	Tissue Engineering
BMD_ENG 347-0	Foundations of Regenerative Engineering
BMD_ENG 348-0	Applications of Regenerative Engineering
BMD_ENG 443-0	Biological Phenomena in Cell/Cell-Free Systems
BMD_ENG 446-0	Biomaterials in Synthetic Biology
CHEM 215-3	Organic Chemistry III (Formerly CHEM 210-3)
CIV_ENV 361-1	Environmental Microbiology
CIV_ENV 442-0	Environmental Biotechnology for Resource Recovery
MAT SCI 353-0	Bioelectronics
Independent Study 399 in approved laboratory	

## Civil and Environmental Engineering

[mccormick.northwestern.edu/civil-environmental](http://mccormick.northwestern.edu/civil-environmental)

The Department of Civil and Environmental Engineering offers two degree programs for undergraduate students, one in civil engineering and

another in environmental engineering, as well as minors in environmental engineering and in architectural engineering and design.

Civil and environmental engineers play central roles in defining sustainable development approaches to the interactions of humans with earth systems. The curricula of these programs place strong emphasis on design, communication, teamwork, and the development of a systems perspective on the complex problems of today and tomorrow.

## Civil Engineering

Civil Engineering is an international profession that provides solutions for pressing societal challenges for both the natural and built environment. Civilian infrastructure systems provide safe and efficient transportation systems for people, food, and manufactured goods; safe and energy efficient residential and commercial buildings; support the ecological and human health by protecting the quality of water, air, and land; and support the energy sector with power plants and their support structures.

Civil Engineering bridges science and society, and thus plays a leading role in planning, designing, building, and ensuring a sustainable future. The American Society of Civil Engineers (ASCE) defines **sustainability** as *a set of economic, environmental and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely, without degrading the quantity, quality or the availability of natural resources and ecosystems*. The civil engineering profession recognizes the reality of limited natural resources, the desire for sustainable practice (including life-cycle analysis and sustainable design techniques), and the need for social equity in the consumption of resources.

Civil Engineers are the stewardess of our natural resources and the built environment that support commerce, recreation, health, and other necessities of modern social economies. They design, construct, and manage these systems as well as the taller, longer, lighter, and more elegant structures at the end nodes, such as airports, sky scrapers, bridges, etc. everywhere on the planet and even in space. Each system has unique characteristics that challenge civil engineers to combine engineering knowledge with initiative and creativity to meet project objectives, protect the well-being of society and our finite natural resources, and meet budget constraints.

In addition to the applications of mathematics, physical, natural, and engineering sciences, Civil Engineers must incorporate excellent communication and people-skills, social, economic, managerial sciences, and collaborate with architects, public officials, owners, contractors, material suppliers and the public during various phases of a project. Their work may extend to materials science to develop new building materials; using advanced sensors and communication devices to monitor performance of bridges, tunnels, buildings in real time, over long distances, and under extreme conditions. Civil engineers have designed infrastructures that stretched the limit of materials, performance, and human desire while preserving our natural resources.

The most unique aspects of civil engineering are: the close interaction with the citizens of a community, influence of political policy, and the ability to execute sustainable designs and constructions that have tremendous impact to the social, economic, and welfare of every member in the world.

At Northwestern, the Civil Engineering curriculum is designed to satisfy students' diverse interests and professional goals. Students develop study plans suited to their unique interests, including options such as the Architectural Engineering and Design Minor and the Environmental

Engineering Minor within our Department, and the Kellogg School of Management Certificate program for undergraduates, to address the social, physical, and financial challenges of constructing and managing the nation's infrastructure.

While Civil engineering graduates typically work in engineering consulting firms, city and county public works, state departments of transportation, construction companies, various branches of federal government, and engineering material product industries, some of our graduates work in the aerospace industry, Wall Street, medicine, laws, politics, and policy development. A majority of Northwestern graduates receive at least one advanced degree. About half of these received advanced degrees are in other professional fields such as aerospace, business administration, medicine, and law. Others may work in research and development, and teaching.

Our recent graduates hold jobs in a wide spectrum of areas such as infrastructure engineering consulting (buildings, bridges, railroads, power plants, environmental treatment plants, etc.), construction, project management, architecture, energy, and finance. Their positions include project engineers, project managers, field engineers, and designers. Some graduates join the business sector as business analysts, technical consultants, and derivative traders. A sample of their employers include Amazon, Boeing, Accenture, ARCADIS, Mass Electric Construction, General Dynamics' Electric Boat Division, National Forest Service, SOM, WSP, Thornton Tomsasetti, Jacobs, and MWRD. Others go directly to graduate school. Most mid-career civil engineers hold supervisory or administrative positions such as project engineers.

## Environmental Engineering

*Is the water safe to drink? Is the air dangerous to breathe? Should we eat the fish we catch or the crops we grow? Do our living and work spaces pose special threats to our health?* Environmental Engineers are the technical professionals who identify and design solutions for environmental problems. They provide answers to the above and other questions about the potentially harmful interrelationships between human civilization and the environment. Environmental engineers apply scientific and technological knowledge to eliminate or reduce environmental problems. They seek to shield the environment from the harmful effects of human activity, protect human populations from adverse environmental events such as floods and disease, and restore environmental quality for ecological and human well-being. Traditionally, environmental engineering includes:

- a. The identification and measurement of potentially harmful physical, chemical, and biological agents in the environment,
- b. The transport and fate of these agents,
- c. The effects of these agents on people and the environment, and
- d. The design and operation of engineered systems for the maintenance and improvement of the quality of our environment.

Historically, it was the sanitary and civil engineers who made cities livable for large populations. However, the role of environmental engineering has been expanding in the past few decades. Increasingly, environmental engineers are being called upon to expand the focus of their efforts to address the challenges associated with alternative energy, sustainability, climate change, ecological restoration and emerging public health threats.

Northwestern has developed an interdisciplinary approach to the education of environmental engineers. The four-year curriculum provides the students with a sound fundamental knowledge of environmental

engineering principles and an opportunity to integrate other aspects such as basic science, social science, humanities, and public policy to their knowledge. Environmental Engineers stand at the threshold between natural environmental systems and human societies!

Graduates in environmental engineering will have many career opportunities in a spectrum of business sectors and government agencies. These include engineering consulting firms that offer challenging employment in environmental planning, design, and management. The manufacturing and chemical industries, utilities, the pollution control industry, and others need engineers for the development and management of research and environmental control programs. Engineers in governmental agencies are responsible for planning and assessment of control strategies and measures to assure a clean and healthful environment. Universities and research organizations afford additional avenues of career development.

Our recent graduates hold positions as engineering designers, business analytics, and staff engineers of regulatory agency. A sample of their employers include AECOM, ARCADIS, Black & Veatch, EPA, Jacobs, RAMBOLL, Tetra Tech, WSP, and many energy start-ups. Many of our graduates continue their education in schools of engineering, law, medicine, public health, and management.

## Programs of Study

- Civil Engineering Degree (p. 164)
- Environmental Engineering Degree (p. 165)
- Architectural Engineering and Design Minor (p. 166)
- Environmental Engineering Minor (p. 166)

### CIV\_ENV 101-0 Introduction to Civil and Environmental Engineering

**(0 Unit)** In this seminar course we discuss the grand challenges facing society in the coming decades, and how Civil and Environmental Engineers are meeting these challenges. Seminars will focus on key CE and EE topics, the CE & EE curricula at NU, and the career paths of recent CE & EE graduates.

### CIV\_ENV 195-0 Introductory Course in Civil and Environmental

**Engineering (0-1 Unit)** Introductory-level special topics courses in civil and environmental engineering. 195 is similar to CIV\_ENV 395-0 but intended for first and second-year students.

**CIV\_ENV 201-0 Engineering Possibilities: Decision Science in the Age of Smart Technologies (1 Unit)** Define challenges facing cities, and learn how to critically evaluate different solutions, ranging from traditional to innovative. Foster critical thinking about problem definitions along with the definition of metrics that represent desirable (and undesirable) outcomes in urban systems.

### CIV\_ENV 202-0 Biological and Ecological Principles (1 Unit)

Fundamentals of biology - including cell biology, genetics, and biochemistry - and ecology - including biological interactions, microbial ecology - and biogeochemical cycling as they apply to natural and engineered systems. Bioinformatics tools necessary for analyzing biological and ecological data. Prerequisites: MATH 220-2; CHEM 131-0, CHEM 151-0, or CHEM 171-0.

### CIV\_ENV 203-0 Earth in the Anthropocene (1 Unit)

Fundamentals of Earth system science and their connections to the need for humans to develop food, water, energy and infrastructure systems that has led to transformation of the Earth's surface and of its atmosphere. Prerequisite: MATH 220-2; CHEM 131-0, CHEM 151-0, or CHEM 171-0 is highly recommended. *Natural Sciences Distro Area*

**CIV\_ENV 205-0 Economics and Finance for Engineers (1 Unit)** Principles of corporate finance; financial decisions of firms; value; risk and return; investment and capital budgeting decisions under certainty and uncertainty; performance evaluation. May not be taken for credit with or after KELLG\_FE 310-0. Prerequisite: MATH 220-1; basic understanding of probability and economics recommended.

**CIV\_ENV 216-0 Mechanics of Materials I (1 Unit)** Analytical and experimental study of stresses and deformations and their application to the design of machine and structural elements subjected to static, dynamic, and repeated loads. Prerequisite: GEN\_ENG 205-2 or GEN\_ENG 206-2.

**CIV\_ENV 220-0 Structural Art (1 Unit)** Learn how to interpret and understand the built environment through an examination of the history of structural engineering as a creative art, with particular emphasis on technical, visual, and social analysis and critique of bridges, buildings, and designers.

**CIV\_ENV 221-0 Theory of Structures I (1 Unit)** Deflections of structures, energy concepts, idealization of structures, truss analysis, column stability, and influence lines. Introduction to indeterminate truss and frame analyses, slope-deflection analysis, and moment distribution. Portal method. Prerequisite: CIV\_ENV 216-0.

**CIV\_ENV 250-0 Earth Surface Engineering (1 Unit)** Fundamental properties and behavior of soils as engineering materials. Origin of soils through the properties of soil components to the strength, permeability, and deformation of soil masses. Prerequisite: MECH\_ENG 241-0.

**CIV\_ENV 260-0 Environmental Systems and Processes (1 Unit)** Basic engineering principles required for the design, operation, analysis, and modeling of both natural and engineered systems and their application to major issues facing human and environmental health of ecosystems. Corequisite: MATH 220-2; CHEM 131-0, CHEM 151-0, or CHEM 171-0 highly recommended.

**CIV\_ENV 280-1 Architectural Engineering & Design Seminar I (0 Unit)** First course in the AED seminar series. Students will learn from practicing architects and engineers, and will also conduct independent studies culminating in their own seminars to the class.

**CIV\_ENV 280-2 Architectural Engineering & Design Seminar II (0 Unit)** Second course in the AED seminar series. Students will learn from practicing architects and engineers, and will also conduct independent studies culminating in their own seminars to the class.

**CIV\_ENV 280-3 Architectural Engineering & Design Seminar III (0 Unit)** Third course in the AED seminar series. Students will learn from practicing architects and engineers, and will also conduct independent studies culminating in their own seminars to the class.

**CIV\_ENV 295-0 Introductory topics in Civil and Environmental Engineering (1 Unit)** Intermediate-level study of topics suggested by students or faculty members and approved by the department.

**CIV\_ENV 301-1 Professional Development Seminar I (0.34 Unit)** Case study in engineering ethics, with discussion of topics in professional development and lifelong learning. Prerequisite: junior engineering standing.

**CIV\_ENV 301-2 Professional Development Seminar II (0 Unit)** Preparation for the Fundamentals of Engineering (FE) exam. Prerequisite: senior engineering standing.

**CIV\_ENV 302-0 Engineering Law (1 Unit)**

The American legal system from an engineer's perspective. Socratic-method analysis of statutory and case law. Contract, patent, corporation,

antitrust, property, and environmental law. Torts, product liability, and arbitration.

Prerequisite: junior engineering standing.

**CIV\_ENV 303-0 Environmental Law and Policy (1 Unit)**

An introduction to important aspects of environmental law and policy. Covers a wide range of environmental topics, with a focus on major federal environmental statutes.

Prerequisite: junior or senior standing.

**CIV\_ENV 304-0 Civil and Environmental Engineering Systems Analysis (1 Unit)**

Quantitative techniques to develop descriptive and prescriptive models that support efficient planning and management of civil and environmental engineering systems.

Prerequisite: MATH 220-2 or equivalent.

**CIV\_ENV 306-0 Uncertainty Analysis (1 Unit)**

Probability, statistics, and decision theory. Discrete and continuous random variables, marginal and conditional distributions, moments, statistical model selection and significance tests, hypothesis testing, and elementary Bayesian decision theory. Application to problems in soil mechanics, water resources, transportation, and structures.

**CIV\_ENV 308-0 Environmental Justice (1 Unit)**

This course will examine evidence that there is not equal environmental protection in this country and analyze why this inequality exists. Course participants will review evidence of environmental injustice, with attention to perspectives of grassroots organizations, the U.S. EPA, and businesses. The course will explore why civil and human rights have become important aspects of environmental protection activities worldwide.

**CIV\_ENV 309-0 Climate and Energy - Law and Policy (1 Unit)**

This course is a survey of the major laws that regulate the acquisition of energy resources, the conversion of energy resources into usable energy, the energy transmission and transportation infrastructure and the climate change implications of these activities.

**CIV\_ENV 314-0 Organic Geochemistry (1 Unit)**

The sources and fates of organic matter in the natural environment; global cycling of organic carbon; applications to the study of modern and ancient environments. Taught with EARTH 314-0; may not receive credit for both courses.

Prerequisites: 1 course in earth and planetary sciences or environmental sciences; 1 course in chemistry.

**CIV\_ENV 317-0 Biogeochemistry (1 Unit)**

Cycling of biogenic elements (C, N, S, Fe, Mn) in surficial environments. Emphasis on microbial processes and isotopic signatures.

Prerequisites: 1 quarter of chemistry; 1 quarter of geoscience, environmental sciences, or biological sciences.

**CIV\_ENV 320-0 Structural Analysis--Dynamics (1 Unit)**

Single and multiple degree-of-freedom systems subjected to periodic, seismic, and general loadings. Time-history analysis of linear and nonlinear systems. Design methods for earthquakes.

Prerequisite: CIV\_ENV 221-0.

**CIV\_ENV 321-0 Concrete Properties (1 Unit)**

Concrete as a composite material; relationship between constitutive laws and microstructure; failure theories; fracture; fatigue; strain rate effects; destructive and nondestructive testing; creep and shrinkage; chemistry of cement hydration; admixtures; aggregates; proportioning; new materials.

**CIV\_ENV 323-0 Structural Steel Design (1 Unit)**

Rational basis of structural design. Design approach for structural-steel components of a building system.

Prerequisites: CIV\_ENV 216-0; CIV\_ENV 221-0 or equivalent.

#### **CIV\_ENV 325-0 Reinforced Concrete (1 Unit)**

Fundamentals of reinforced concrete theory and design. Analysis and design of beams, slabs, and columns. Concurrent familiarization with current building codes, specifications, and practices.

Prerequisite: CIV\_ENV 221-0.

**CIV\_ENV 326-0 Engineering Forensics (1 Unit)** Introduction to failure analysis and forensic engineering to describe how these investigative procedures contribute to regulations, engineering design, safety principles, and the economic aspects of structure engineering.

Prerequisite: CIV\_ENV 221-0.

#### **CIV\_ENV 327-0 Finite Element Methods in Mechanics (1 Unit)**

Development of finite elements from variational principles and application to static stress analysis. Introduction to techniques for transient and generalized field problems. Computer implementation of finite element techniques. Taught with MECH\_ENG 327-0; may not receive credit for both courses.

#### **CIV\_ENV 328-0 Computational Forensics and Failure Analysis (1 Unit)**

The course will cover the use of the scientific method for accident investigation, hypothesis development, and the use of the finite element method to analyze the root cause of a failure. Practical application problems for both civil and mechanical structures will be analyzed using commercial finite element codes (Abaqus, Hypermesh, LS-Dyna). Prerequisite: CIV\_ENV 327-0 or MECH\_ENG 327-0.

#### **CIV\_ENV 330-0 Engineering Project Management (1 Unit)**

Techniques for coordinating decisions and actions of various parties in the design and construction of civil and environmental engineering projects. Delivery systems; preconstruction services; project planning; cost control and value engineering; bidding.

Prerequisite: instructor consent.

#### **CIV\_ENV 332-10 Building Construction Estimating (1 Unit)**

Estimation of cost at different stages of design; conceptual estimating and quantity takeoff of various elements, such as materials, labor, and equipment.

Prerequisites: CIV\_ENV 330-0; consent of instructor.

#### **CIV\_ENV 336-10 Project Scheduling (1 Unit)**

Project planning, scheduling, and control using CPM arrow and precedence networks; resource allocation and resource leveling; earned value analysis; linear scheduling; PERT, CPM in dispute resolution and litigation, computer scheduling.

Prerequisite: CIV\_ENV 330-0.

#### **CIV\_ENV 340-0 Hydraulics and Hydrology (1 Unit)**

Civil and environmental engineering applications of fluid mechanics. Turbulent flow in pipes and rivers, pipe and river networks, and open channels.

Prerequisite: MECH\_ENG 241-0.

#### **CIV\_ENV 346-0 Ecohydrology (1 Unit)**

Interactions between water and ecosystems in freshwater, terrestrial, and urban environments. Feedbacks between ecological and hydrological processes. Engineering of ecosystems such as constructed wetlands, green roofs, and other green infrastructure for resilient and sustainable water management.

Prerequisites: Students must have taken MECH\_ENG 241, CIV\_ENV 260, and CIV\_ENV 361-1 or graduate standing.

#### **CIV\_ENV 352-0 Foundation Engineering (1 Unit)**

Application of soil mechanics to analysis and design of foundations and embankments. Settlement of structures, bearing capacities of shallow

and deep foundations, earth pressures on retaining structures, and slope stability.

Prerequisite: CIV\_ENV 250-0.

#### **CIV\_ENV 353-0 Energy Geostructures & Geosystems (1 Unit)**

This course focuses on energy geostructures and geosystems: novel earth-contact technologies that provide renewable energy supply and structural support to any built environment. The course comprises theoretical and practical sessions. The theoretical sessions expand on the analysis and design of such technologies from energy, geotechnical and structural perspectives. The practical sessions simulate an actual design project of energy geostructures.

#### **CIV\_ENV 357-0 Terramechanics (1 Unit)**

Problems defined by the interaction between machines and terrain—or by organisms and terrain—are ubiquitous on Earth, and they are beginning to play important roles elsewhere as we explore, exploit, and perhaps eventually occupy the moon and other planets. While aspects of these problems are understood, much remains to be learned in the field of terramechanics.

#### **CIV\_ENV 361-1 Environmental Microbiology (1 Unit)**

Basic principles and practical applications of microbiology to environmental issues, such as microbial contamination, degradation of organic contaminants, production of alternative fuels, and global climate change.

#### **CIV\_ENV 361-2 Public & Environmental Health (1 Unit)**

Current problems in public and environmental health, such as the worldwide burden of major infectious diseases, emergence of new pathogens, and environmental reservoirs of infectious organisms. Prerequisite: CIV\_ENV 361-1 or consent of instructor.

#### **CIV\_ENV 364-0 Sustainable Water Systems (1 Unit)**

An overview of the engineered water cycle focusing the fundamental principles as well as the design and assessment methods for physical, chemical and biological treatment unit processes for drinking water treatment, used water treatment and reuse, and emerging issues such as the energy-food-water nexus.

Prerequisites: CIV\_ENV 260-0, MECH\_ENG 241-0.

#### **CIV\_ENV 365-0 Environmental Laboratory (1 Unit)**

Chemical and microbiological aspects of environmental engineering and science are explored through an integrated laboratory course.

Prerequisite: CIV\_ENV 367-0.

#### **CIV\_ENV 366-0 Dynamics in Chemical Transport and Reaction (1 Unit)**

Application of environmental engineering fundamentals to evaluate, model, and develop engineering solutions for different environmental contamination scenarios. Prerequisite: CIV\_ENV 260 or instructor consent.

#### **CIV\_ENV 367-0 Chemical Processes in Aquatic Systems (1 Unit)**

Chemical principles for understanding and predicting the chemical composition and evolution of natural waters using an equilibrium approach. Applications to environmental issues such as metal speciation and toxicity, ocean acidification, carbon storage.

Prerequisite: BMD\_ENG 250-0 or CHEM\_ENG 211-0.

#### **CIV\_ENV 368-0 Sustainability: The City (1 Unit)**

Exploration of the issues that motivate the design and engineering of sustainable resource use and development.

#### **CIV\_ENV 370-0 Emerging Organic Contaminants (1 Unit)**

Fundamental molecular processes that govern the fate and transformation of emerging organic contaminants in natural and engineered environmental systems.

Prerequisite: CHEM 210-1 or consent of instructor.

**CIV\_ENV 371-0 Introduction to Transportation Planning and Analysis (1 Unit)**

Analysis and design of solutions to transportation problems; introduction to selected operations research and statistical analysis techniques; use of case studies in urban transportation, intercity passenger transport, and freight movements.

Prerequisite: junior standing or consent of instructor.

**CIV\_ENV 376-0 Transportation System Operations (1 Unit)**

Traffic-flow theory; vehicle and human factors, capacity analysis, intersection performance and control; management and control of arterial streets and networks; neighborhood traffic restraint, urban transit operations. Operations concepts and theories applied to actual problems through laboratory practice.

Prerequisite: basic understanding of calculus and statistics; knowledge of MATLAB desirable but not required.

**CIV\_ENV 377-0 Choice Modelling in Engineering (1 Unit)**

"This course focuses on the theory and practice of survey design, data and analysis. In this course students will learn the theories and scientific debates around the design, administration and analysis of various types of behavioral data-collection methods."

**CIV\_ENV 382-1 Capstone Design I (0.5 Unit)** Culminating team-based design experience in civil and environmental engineering, with an overview of the function, design, and operations of modern infrastructure systems. Part 1 of 2-course sequence. Prerequisite: senior standing in civil or environmental engineering or consent of instructor.

**CIV\_ENV 382-2 Capstone Design II (0.5 Unit)** Culminating team-based design experience in civil and environmental engineering, with an overview of the function, design, and operations of modern infrastructure systems. Part 2 of 2-course sequence. Prerequisite: CIV\_ENV 382-1.

**CIV\_ENV 385-1 Architectural Engineering and Design 1: Fundamentals (1 Unit)**

Architectural engineering and design studios: architectural history, case studies in design, construction and management of buildings, and drawing and model building. Fundamental studio: basic architectural and structural design of a simple building project.

Prerequisite: junior standing in engineering or consent of instructor.

**CIV\_ENV 385-2 Architectural Engineering & Design 2: Intermediate (1 Unit)**

Architectural engineering and design studios: architectural history, case studies in design, construction and management of buildings, and drawing and model building. Intermediate studio: architectural and structural design of a building project with multiple requirements.

Prerequisites: CIV\_ENV 385-1 and junior standing in engineering; or consent of instructor.

**CIV\_ENV 385-3 Architectural Engineering & Design 3: Advanced Studio (1 Unit)**

Architectural engineering and design studios: architectural history, case studies in design, construction and management of buildings, and drawing and model building. Advanced studio: architectural and structural design of a large, complex building project.

Prerequisites: CIV\_ENV 385-2 and junior standing in engineering; or consent of instructor.

**CIV\_ENV 386-0 High Performance Architectural Design (1 Unit)**

Elements of high performance building design and to explore the various metrics used to analyze the relationship between the structure and function of various design alternatives.

**CIV\_ENV 387-0 Design of Sustainable Urban Developments (1 Unit)**

Design high performing neighborhoods, districts and communities

that incorporate principles of density, diversity and flexibility around the "operating system of nature". Prerequisites: CIV\_ENV 386-0, senior standing, consent of instructor; recommend CIV\_ENV 385-1, CIV\_ENV 385-2, and CIV\_ENV 385-3.

**CIV\_ENV 388-1 Building Science I: Fundamentals for Sustainable Buildings (1 Unit)** The course is the first of a two-part series focusing on Building Science. This course aims to provide the fundamental knowledge of the physics related to buildings, focusing on heat and mass transfer, moisture, and the energy consumed in buildings to guarantee the comfort of their occupants.

**CIV\_ENV 388-2 Building Science II: Application for Sustainable Buildings (1 Unit)**

This course enriches and applies the concepts learned in CIV\_ENV 388-1. The course comprises both theoretical and practical sessions.

Theoretical sessions introduce the environmental factors affecting occupants' comfort inside buildings. Practical sessions focus on the design of a virtual project, with calculations related to energy consumption and visual and thermal parameters with the help of computer software.

**CIV\_ENV 395-0 Special Topics in Civil and Environmental Engrg (1 Unit)**

Topics suggested by students or faculty and approved by the department.

**CIV\_ENV 398-1 Community-based Design 1 (1 Unit)**

Yearlong participation in two-or three-person team projects involving research, analysis, and/or design in the solution of environmental problems affecting primarily lower-income communities. Grade assigned only on completion of both units.

Prerequisite: consent of instructor.

**CIV\_ENV 398-2 Community-based Design 2 (1 Unit)**

Yearlong participation in two-or three-person team projects involving research, analysis, and/or design in the solution of environmental problems affecting primarily lower-income communities. Grade assigned only on completion of both units.

Prerequisite: consent of instructor.

**CIV\_ENV 399-0 Projects (1 Unit)** Special studies under faculty direction. Credit to be arranged.

**CIV\_ENV 410-0 Theory of Plates and Shells (1 Unit)**

Derivation of governing equations for plates, cylindrical shells and spherical shells, analytical and numerical methods for the solutions of elastic and inelastic problems, and civil engineering applications.

**CIV\_ENV 413-0 Experimental Solid Mechanics (1 Unit)**

Experimental techniques in measuring stress and strain. Strain gauge, photoelastic, brittle coating, and Moire techniques studies and applied with selected laboratory experiments. CIV\_ENV 413-0 and MECH\_ENG 413-0 are co-listed.

**CIV\_ENV 414-1 Mechanics of Composite Materials 1 (1 Unit)**

Introduction to basic concepts: fabrication of composite materials, micromechanics, macro-mechanics of unidirectional lamina, failure theories, mechanics of multidirectional laminate, lamination theory, hydrothermal effects, inter-laminar stresses, stress concentrations, structural design and optimization, and nondestructive evaluation. CIV\_ENV 414-1 and MECH\_ENG 414-1 are co-listed.

**CIV\_ENV 414-2 Mechanics of Composite Materials II (1 Unit)**

Introduction to basic concepts: fabrication of composite materials, micromechanics, macro-mechanics of unidirectional lamina, failure theories, mechanics of multidirectional laminate, lamination theory, hydrothermal effects, inter-laminar stresses, stress concentrations, structural design and optimization, and nondestructive evaluation. CIV\_ENV 414-2 and MECH\_ENG 414-2 are co-listed.

**CIV\_ENV 415-0 Theory of Elasticity (1 Unit)**

Notions of stress and strain. Basic equations of the linear theory of elastic media. Stress function and displacement potentials. Applications to specific classes of problems such as plane strain, contact stresses, and axisymmetric problems. Stress concentration. Singular states of stress. Dislocations and residual stresses.

**CIV\_ENV 416-0 Computational Nanodynamics (1 Unit)**

The objective of this course is to learn how to use theoretical and computational modeling tools to simulate dynamic solid mechanics phenomena at small scales. Topics covered include elementary concepts in dynamics, statistical mechanics, molecular interactions, coarse-graining strategies, and application of the molecular dynamics methodology to elasticity, diffusion, self-assembly, vibrations, fragmentation and fracture problems of relevance to nanoscale, biological and biomolecular systems.

**CIV\_ENV 417-1 Mechanics of Continua 1 (1 Unit)**

Introduction to mechanics of continuous media. Cartesian tensors; kinematics of deformable media; stress; balance laws; constitutive relations for selected solids and fluids.

**CIV\_ENV 419-0 Elastic Wave Propagation in Periodic Solids (1 Unit)**

Introduction of elastodynamic wave equations in anisotropic solids, plane longitudinal, transverse, and surface waves, harmonic waves and pulses, energy considerations, reflection, transmission, and mode conversion, scattering and diffraction problems, reciprocity relations, piezoelectric materials, and band engineering using periodic solids and metamaterials. Prerequisites: CIV\_ENV 415-0, MECH\_ENG 363-0 or MECH\_ENG 390-0, or equivalent.

**CIV\_ENV 421-0 Prestressed Concrete Design (1 Unit)**

Principles of prestressed concrete. Prestressing systems, end anchorage, and loss of prestress. Analysis and design of sections for flexure, shear, bond, bearing, and deflection. Continuous beams, slab, tension, and compression members. Circular prestressing.

**CIV\_ENV 422-0 Inelastic Analysis of Structures (1 Unit)**

Inelastic analysis of frames, plates, and shells. Plastic behavior and limit analysis theorems. Static and kinematic methods for calculating collapse loads. Yield surfaces for plates and shells, plastic potential flow law, and load capacity. Viscoelastic behavior and rheologic models. Creep of concrete and its effects in structures.

**CIV\_ENV 423-0 Matrix Analysis of Structures (1 Unit)**

Use of matrix methods for analysis of articulated structural systems, geometric matrices, stability, analysis of geometrically nonlinear systems, introduction to the finite element method.

**CIV\_ENV 424-0 Stability of Structures (1 Unit)**

Buckling of perfect and imperfect columns, mathematical treatment of various types of stability problems and stability criteria, dynamic and static instability, and energy methods. Buckling of frames, trusses, and beams. Snap-through, elastic-plastic columns, creep buckling, and basic approach to buckling of two- and three-dimensional bodies.

**CIV\_ENV 425-0 Behavior of Reinforced Concrete (1 Unit)**

Nonlinear behavior of reinforced concrete structural members. assumptions underlying serviceability criteria, ductility for earthquake design, etc.

**CIV\_ENV 426-1 Advanced Finite Element Methods 1 (1 Unit)**

Methods for treating material and geometric nonlinearities by finite elements; transient analysis: explicit and implicit time integration, partitioned methods, and stability; hybrid and mixed elements; finite elements for plates and shells; convergence, efficiency, and computer implementation. Co-listed with MECH\_ENG 426-1.

**CIV\_ENV 426-2 Advanced Finite Element Methods 2 (1 Unit)**

This course will cover the fundamentals of non-standard finite element formulations such as Moving Least Squares (MLS), Element Free Galerkin (EFG), Reproducing Kernel Particle Method (RKPM), Material Point Method (MPM), Arbitrary Lagrangian Eulerian (ALE) Formulations, and the eXtended Finite Element Method (XFEM). The course will also provide an in-depth investigation of advanced application of finite element analysis and interfacing user-developed material models with commercial finite element codes (Abaqus/LS-DYNA). Theory and implementation of computational plasticity, nonlinear elasticity, pressure-sensitive plasticity, and damage-based plasticity will be discussed. Material classes to be discussed are those commonly found in manufacturing, geomechanical, and biological applications such as ductile metals, soil, and tissue. Co-listed with MECH\_ENG 426-2.

**CIV\_ENV 428-1 Structural Design I (1 Unit)**

First course in the structural design studio. Students will learn fundamental topics of structural mechanics, materials, and engineering, and then apply them to a realistic design project, coordinated by practicing structural engineers.

**CIV\_ENV 428-2 Structural Design II (1 Unit)**

Second course in the structural design studio. Students will learn fundamental topics of structural mechanics, materials, and engineering, and then apply them to a realistic design project, coordinated by practicing structural engineers.

**CIV\_ENV 428-3 Structural Design III (1 Unit)**

Third course in the structural design studio. Students will learn fundamental topics of structural mechanics, materials, and engineering, and then apply them to a realistic design project, coordinated by practicing structural engineers.

**CIV\_ENV 430-0 Quasibrittle Fracture and Scaling (1 Unit)**

Fracture mechanics fundamentals. Concrete, composites, ice, rocks, soils, ceramics. Cohesive crack model. Crack band model. Damage. Localization. Nonlocality. Size effect laws. Statistical aspects. Discrete micro-modeling. Fracture stability. Environmental effects, loading rate and fatigue.

**CIV\_ENV 435-10 Cost Engineering and Control (1 Unit)**

Application of cost engineering for construction companies and projects; accounting methods; estimating process and bid preparation; labor cost; earned value analysis; accounting for equipment; cost-control concepts; cash flow management, changes and extras; claims. Prerequisites: PROJ\_MGT 403-0 and PROJ\_MGT 405-0.

**CIV\_ENV 440-0 Environmental Transport Processes (1 Unit)**

Processes controlling transport and fate of dissolved and suspended substances in natural and engineered environmental systems. Mass balances, hydrodynamic transport, phase and mass transfers; the fate of reactive species in complex environmental systems..

**CIV\_ENV 442-0 Environmental Biotechnology for Resource Recovery (1 Unit)**

Theory and practice of microbiological processes used for pollution control and resource recovery: kinetics of suspended-growth and fixed-film processes, activated sludge, biofilm processes, nitrogen and phosphorus removal, methanogenesis.

Prerequisites: CIV\_ENV 440-0, CIV\_ENV 361-1.

**CIV\_ENV 443-0 Microbial Ecology for Resource Recovery (1 Unit)**

This course provides students with an overview of microbial ecology—that is, the study of interactions between microorganisms and the environment—and how complex microbial communities are linked function and stability of both engineered and natural systems.

**CIV\_ENV 447-0 Molecular Microbiology (1 Unit)**

An in-depth look at current molecular methods used to study environmental microbiology. Fundamentals of molecular microbiology, creative and critical analysis of literature through proposal writing and reviewing. Topics focus on polymerase chain reaction and derivatives; DNA sequencing; proteomics & proteogenomics, and metabolomics.

**CIV\_ENV 448-0 Computational Chemodynamics (1 Unit)**

An in-depth understanding of the processes that govern the fate of chemicals in the environment by developing computational tools used to quantify the concentrations of contaminants and nutrients. Numerical methods focus on solving: multiphase equilibrium problems, box models, reaction networks and kinetics, the interplay between transport and reaction, partitioning, and trophic relationships.

**CIV\_ENV 449-0 Environmental Particles and Surface Chemistry (1 Unit)**

Environmental particles facilitate the cycling of important elements in the environment. This course presents fundamental concepts and applications of chemical kinetics, chemical equilibrium, and molecular spectroscopy to characterize their surface properties.

**CIV\_ENV 450-1 Soil Mechanics 1 (1 Unit)**

First Quarter: Shear strength of soils. Theory of consolidation. Problems of rate-independent and rate-dependent settlement. Second Quarter: Foundation engineering. Bearing capacity of shallow and deep foundations. Deformation of foundations. Effects of construction on performance. Case studies. Third Quarter: Earth and earth-supported structures. Earth pressures on walls. Design of retaining structures and supported excavations. Effects of construction on performance. Stability of slopes. Design of earth dams and embankments. Case studies.

**CIV\_ENV 450-2 Soil Mechanics 2 (1 Unit)**

First Quarter: Shear strength of soils. Theory of consolidation. Problems of rate-independent and rate-dependent settlement. Second Quarter: Foundation engineering. Bearing capacity of shallow and deep foundations. Deformation of foundations. Effects of construction on performance. Case studies. Third Quarter: Earth and earth-supported structures. Earth pressures on walls. Design of retaining structures and supported excavations. Effects of construction on performance. Stability of slopes. Design of earth dams and embankments. Case studies.

**CIV\_ENV 450-3 Soil Mechanics 3 (1 Unit)**

First Quarter: Shear strength of soils. Theory of consolidation. Problems of rate-independent and rate-dependent settlement. Second Quarter: Foundation engineering. Bearing capacity of shallow and deep foundations. Deformation of foundations. Effects of construction on performance. Case studies. Third Quarter: Earth and earth-supported structures. Earth pressures on walls. Design of retaining structures and supported excavations. Effects of construction on performance. Stability of slopes. Design of earth dams and embankments. Case studies.

**CIV\_ENV 452-0 Unsaturated Soil Mechanics (1 Unit)**

Principles of the hydraulics and mechanics of natural and engineered soils characterized by unsaturated conditions.

**CIV\_ENV 454-0 Constitutive Models for Soils (1 Unit)**

Numerical models of effective and total stress-strain response of soils; non-linear pseudo-elastic, elasto-plastic and bounding surface models; parameter identification and applications.

Prerequisites: CIV\_ENV 450-1 or permission of instructor.

**CIV\_ENV 455-0 Plasticity and Limit Analysis (1 Unit)**

Fundamental theory of and computational tools for plasticity, including the concepts of yielding and plastic flow in materials and, by extension, the concepts of limit (collapse) loads and collapse mechanisms in boundary value problems.

**CIV\_ENV 456-0 Computational Geotechnics (1 Unit)**

Fundamentals of the finite element method for geotechnical analysis. This course provides an essential skillset to those entering the practice of geotechnical engineering, and builds a foundation for future study and inquiry to those who are engaged primarily in research.

**CIV\_ENV 457-0 Environmental Geotechnics (1 Unit)**

Site characterization, geotechnical aspects of waste containment, and remediation. Geological setting and the heterogeneous nature of soils. Design, testing, and quality control for geosynthetics.

**CIV\_ENV 458-0 Soil Dynamics (1 Unit)**

Dynamics of soils and soil-foundation systems; nuclear weapon effects, earthquake response, vibrations of machine foundations, reactions due to impact equipment, industrial noise and blast effects, fatigue concepts, wave propagation and attenuation, blast-resistant construction, and linear and nonlinear systems.

**CIV\_ENV 468-0 Metals in the Environment (1 Unit)**

A course on concepts, fundamentals, and tools used for studying the fate of metals in the environment. The emphasis is placed on the processes that control and regulate the chemical speciation of metals in aquatic environments and inform about their interactions with biological species.

**CIV\_ENV 471-1 Transportation Systems Analysis 1 (1 Unit)**

Applications of optimization methods to analysis, design, and operation of transportation and logistics networks. Network equilibrium; flow prediction in congested multicommodity networks; vehicle routing and fleet management; dynamic and stochastic transportation network modeling.

Prerequisites: IEMS 310-0 or equivalent background.

**CIV\_ENV 471-2 Transportation Systems Analysis 2 (1 Unit)**

Applications of optimization methods to analysis, design, and operation of transportation and logistics networks. Network equilibrium; flow prediction in congested multicommodity networks; vehicle routing and fleet management; dynamic and stochastic transportation network modeling.

Prerequisites: IEMS 310-0 or equivalent background.

**CIV\_ENV 472-1 Transportation System Operations and Control 1: Urban Networks (1 Unit)**

Concepts and advanced methodologies for the design of control strategies for transportation systems operations, focusing on urban traffic networks.

**CIV\_ENV 472-2 Transportation System Operations and Control 2: Scheduled Modes and Real-Time (1 Unit)**

Concepts and advanced methodologies for the design of service networks, operating plans and control strategies for scheduled transportation modes and real-time services.

**CIV\_ENV 474-0 Data Analytics for Urban Systems (1 Unit)**

This course presents concepts as well as computing tools for analyzing large data sets that are collected to improve urban systems with a particular focus on transportation. It covers tools for data exploration, preprocessing, mining, and visualization; up-to-date machine learning algorithms – random forest, xgboost, deep learning algorithms and reinforcement learning.

**CIV\_ENV 479-0 Transp Systems Planning & Management (1 Unit)**

Functional and structural description of transportation systems; characteristics of major US transportation modes; transportation analysis, planning, problem-solving, and decision-making methods illustrated through urban, freight, and intercity case studies.

**CIV\_ENV 480-1 Travel Demand Analysis & Forecasting 1 (1 Unit)**

Introduction and application of statistical, econometric, and marketing research techniques to study and forecast travel behavior. First Quarter: Introduction to theory, analysis, and model development. Second Quarter: Advanced theory, disaggregate choice models, and prediction methods.

**CIV\_ENV 480-2 Advances in Travel Demand Analysis and Forecasting (1 Unit)**

This course addresses developments in the econometric and behavioral aspects of demand analysis and forecasting, supply-demand interaction in transport systems, and dynamics models.

**CIV\_ENV 482-0 Evaluation and Decision Making for Infrastructure Systems (1 Unit)**

Theories and methods of evaluation and choice from alternatives for transportation and other infrastructure projects and systems. Economic, quantitative, and judgmental methods for both a priori and before-and-after evaluation. Measurement, modeling, analysis, and presentation problems.

Prerequisites: CIV\_ENV 306-0.

**CIV\_ENV 483-0 Infrastructure Systems Analysis (1 Unit)**

Quantitative techniques for developing prescriptive models that can be used to support efficient planning and management of civil infrastructure systems.

**CIV\_ENV 484-0 Advanced Theories of Traffic Flow (1 Unit)**

This course is concerned with the behavior of vehicular and multimodal traffic as a complex system. It seeks to convey a conceptual understanding of traffic processes through the development of mathematical models of these processes.

**CIV\_ENV 495-0 Selected Topics in Civil Engineering (1 Unit)**

Special topics under faculty direction.

**CIV\_ENV 497-0 Special Topics in Civil Engineering (0.5 Unit)**

Topics selected from work of current interest in civil or environmental engineering.

**CIV\_ENV 499-0 Projects (1-3 Units)**

Special projects under faculty direction. Permission of instructor and department required.

**CIV\_ENV 504-0 Structural System Capstone Pre-design Seminar (0 Unit)**

Preliminary discussion and planning of a structural system with realistic constraints to be designed by students in the M.S. program with specialization in structural engineering and geotechnical engineering.

**CIV\_ENV 508-0 M.S. Research Paper for non-thesis option (0 Unit)**

Report on topics approved by faculty for M.S. students with non-thesis option.

**CIV\_ENV 512-1 Structural Engineering & Mechanics Sem (0 Unit)**

Selected topics in structural engineering and materials and mechanics of materials and solids.

**CIV\_ENV 512-2 Structural Engineering & Mechanics Sem (0 Unit)**

Selected topics in structural engineering and materials and mechanics of materials and solids.

**CIV\_ENV 512-3 Structural Engineering & Mechanics Sem (0 Unit)**

Selected topics in structural engineering and materials and mechanics of materials and solids.

**CIV\_ENV 515-1 Geotechnics Seminar (0 Unit)**

Discussion of classical and current literature in the field.

**CIV\_ENV 515-2 Geotechnics Seminar (0 Unit)**

Discussion of classical and current literature in the field.

**CIV\_ENV 516-1 Seminar in Environmental Engineering & Science (0 Unit)**

Topics vary. Examples: environmental microbiology; innovation technologies for recycling, recovery, treatment of chemical residuals; environmental policy; public health; water and waste treatment processes; contaminant fate and impact in nature.

**CIV\_ENV 516-2 Seminar in Environmental Engineering and Science (0 Unit)**

Topics vary. Examples: environmental microbiology; innovation technologies for recycling, recovery, treatment of chemical residuals; environmental policy; public health; water and waste treatment processes; contaminant fate and impact in nature.

**CIV\_ENV 516-3 Seminar in Environmental Engineering and Science (0 Unit)**

Topics vary. Examples: environmental microbiology; innovation technologies for recycling, recovery, treatment of chemical residuals; environmental policy; public health; water and waste treatment processes; contaminant fate and impact in nature.

**CIV\_ENV 517-1 Seminar in Transportation Engineering (0 Unit)**

Selected topics in transportation engineering.

**CIV\_ENV 517-2 Seminar in Transportation Engineering (0 Unit)**

**CIV\_ENV 517-3 Seminar in Transportation Engineering (0 Unit)**

Selected topics in transportation engineering.

**CIV\_ENV 590-0 Research (1-4 Units)**

Independent investigation of selected problems pertaining to thesis or dissertation. May be repeated for credit.

## Civil Engineering Degree

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Requirements (48 units)

### Core courses (27 units)<sup>1</sup>

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:</b> <sup>2</sup>	
PHYSICS 135-2	General Physics
CHEM 131-0 or CHEM 151-0 or CHEM 171-0	Fundamentals of Chemistry I General Chemistry I Advanced General Inorganic Chemistry
1 unit in biological sciences, or	
CIV_ENV 203-0 or EARTH 201-0 or EARTH 202-0	Earth in the Anthropocene Earth Systems Revealed Earth's Interior
1 additional unit in biological sciences (200-level or higher), chemistry, or physics, or	
EARTH 201-0 or EARTH 202-0 or CIV_ENV 203-0	Earth Systems Revealed Earth's Interior Earth in the Anthropocene
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

1 unit of unrestricted electives is from Chemistry lab, PHYSICS 136-2, and CIV\_ENV 301-1

## **Major Program (21 units)<sup>3</sup>**

Course	Title
<b>2 basic courses chosen from the options below</b>	
CIV_ENV 201-0	Engineering Possibilities: Decision Science in the Age of Smart Technologies
CIV_ENV 202-0	Biological and Ecological Principles
CIV_ENV 220-0	Structural Art
<b>5 basic engineering courses</b>	
CIV_ENV 216-0	Mechanics of Materials I
CIV_ENV 304-0	Civil and Environmental Engineering Systems Analysis
CIV_ENV 306-0	Uncertainty Analysis
MECH_ENG 222-0 or BMD_ENG 250-0 or CHEM_ENG 211-0	Thermodynamics & Statistical Mechanics - I Thermodynamics Thermodynamics
MECH_ENG 241-0	Fluid Mechanics I
<b>4 civil engineering breadth courses</b>	
CIV_ENV 221-0	Theory of Structures I
CIV_ENV 250-0	Earth Surface Engineering
CIV_ENV 260-0	Environmental Systems and Processes
CIV_ENV 371-0 or CIV_ENV 376-0	Introduction to Transportation Planning and Analysis Transportation System Operations
<b>4 courses chosen from the focus areas below<sup>4,5</sup></b>	
Architectural Engineering & Design	
Environmental	
Geotechnics	
Management	
Structures	
Transportation	
<b>2 capstone design courses (0.5 units each)</b>	
CIV_ENV 382-1 & CIV_ENV 382-2	Capstone Design I and Capstone Design II
<b>5 technical elective courses<sup>6</sup></b>	
300 level or higher in mathematics, science, engineering, or another area supporting the area of specialization	
<b>1 professional development course (0.34 units)<sup>7</sup></b>	
CIV_ENV 301-1	Professional Development Seminar I

<sup>1</sup> See **general requirements** for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. Associated lab is PHYSICS 126-2 Physics for ISP Laboratory or PHYSICS 136-2 General Physics Laboratory.

<sup>3</sup> At least 17 out of the 21 units in the major program must be CIV\_ENV courses with 100% engineering topic; **only** GEN\_ENG 220-1 Analy/ Comp Graph and GEN\_ENG 220-2 Analy/Comp Graph II may be taken P/N.

<sup>4</sup> Must select from an approved list available in Undergraduate CIV\_ENV Handbook; must choose at least 2 design courses<sup>3</sup> from 2 focus areas.

<sup>5</sup> Design is defined as courses taught by licensed Professional Engineer or equivalent as defined by ABET and use appropriate codes and/or standards.

<sup>6</sup> GEN\_ENG 220-1 Analy/Comp Graph and GEN\_ENG 220-2 Analy/ Comp Graph II may count toward this requirement; only 1 unit of CIV\_ENV 399-0 Projects may be counted; no 399 from another department is accepted. Choose from an approved list available in Undergraduate CIV\_ENV Handbook.

<sup>7</sup> 0.34 units may count towards unrestricted electives.

## **Environmental Engineering Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Requirements (48 units)**

#### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:</b>	
PHYSICS 135-2 & PHYSICS 136-3 or PHYSICS 125-2 & PHYSICS 126-2 or PHYSICS 140-2 & PHYSICS 136-2	General Physics and General Physics Laboratory General Physics for ISP and Physics Laboratory for ISP Fundamentals of Physics and General Physics Laboratory
CHEM 131-0 & CHEM 132-0 & CHEM 141-0 & CHEM 142-0 or CHEM 151-0 & CHEM 152-0 & CHEM 161-0 & CHEM 162-0 or CHEM 171-0 & CHEM 172-0 & CHEM 181-0 & CHEM 182-0	Fundamentals of Chemistry I and Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory I and Fundamentals of Chemistry Laboratory II General Chemistry I and General Chemistry II and General Chemistry Laboratory I and General Chemistry Laboratory II Advanced General Inorganic Chemistry and Advanced General Physical Chemistry and Advanced General Inorganic Chemistry Laboratory and Advanced General Physical Chemistry Laboratory

<sup>1</sup> 4 engineering analysis and computer proficiency courses (p. 144)

<sup>2</sup> 3 design and communications courses (p. 144)

<sup>7</sup> 2 social sciences/humanities courses (p. 144)

<sup>5</sup> 5 unrestricted electives (p. 144)

## **Major Program (21 units)**

Course	Title
<b>3 gateway courses</b>	
CIV_ENV 201-0	Engineering Possibilities: Decision Science in the Age of Smart Technologies
CIV_ENV 202-0	Biological and Ecological Principles
CIV_ENV 203-0	Earth in the Anthropocene
<b>5 basic engineering courses</b>	
BMD_ENG 250-0 or CHEM_ENG 211-0	Thermodynamics Thermodynamics
CIV_ENV 304-0	Civil and Environmental Engineering Systems Analysis
CIV_ENV 306-0	Uncertainty Analysis
MAT_SCI 201-0	Introduction to Materials Science and Engineering Principles
MECH_ENG 241-0	Fluid Mechanics I
<b>8 environmental engineering core courses</b>	
CHEM 215-1	Organic Chemistry I
CIV_ENV 260-0	Environmental Systems and Processes
CIV_ENV 361-1	Environmental Microbiology
CIV_ENV 346-0	Ecohydrology
CIV_ENV 364-0	Sustainable Water Systems

CIV_ENV 365-0	Environmental Laboratory	CIV_ENV 368-0	Sustainability: The City
CIV_ENV 366-0	Dynamics in Chemical Transport and Reaction	CIV_ENV 386-0	High Performance Architectural Design
CIV_ENV 367-0	Chemical Processes in Aquatic Systems	CIV_ENV 387-0	Design of Sustainable Urban Developments
<b>2 capstone design courses (0.5 units each)</b>			
CIV_ENV 382-1	Capstone Design I	CIV_ENV 388-1	Building Science I: Fundamentals for Sustainable Buildings
& CIV_ENV 382-2	and Capstone Design II	CIV_ENV 388-2	Building Science II: Application for Sustainable Buildings
<b>4 technical elective courses<sup>2</sup></b>			
<b>1 professional development course (0.34 units)<sup>3</sup></b>		CIV_ENV 395-0	Special Topics in Civil and Environmental Engrg (Indoor Air Quality or Building Enclosure Design)
CIV_ENV 301-1			
Professional Development Seminar I			

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> From an approved list (available in Undergraduate CIV\_ENV Handbook) in engineering, mathematics, or science; at least 3 units must be 100% engineering topic; may include only 1 unit of CIV\_ENV 399-0 Projects; no 399 course from another department is accepted; no course may be taken P/N.

<sup>3</sup> 0.34 units may count toward unrestricted electives.

## Architectural Engineering and Design Minor

The Minor in Architectural Engineering and Design trains students in the fundamental principles and practice of architectural and engineering design. Students completing this program will learn architectural conceptualization, programming, and design implementation in conjunction with analysis of the engineering materials and systems used in the construction of buildings and other structures. A key element of the program is aesthetic skills, which will be honed through the creative iterations of design. Students completing this program will be uniquely prepared for advanced study in either architecture or engineering, and regardless of their ultimate career track, will be prepared as leaders of the building design profession.

Course	Title
<b>Minor Requirements (8 units)</b>	
<i>Architectural Seminar - 0 unit<sup>1</sup></i>	
CIV_ENV 280-1	Architectural Engineering & Design Seminar I
CIV_ENV 280-2	Architectural Engineering & Design Seminar II
CIV_ENV 280-3	Architectural Engineering & Design Seminar III
<i>Core courses - 3 required units<sup>2</sup></i>	
CIV_ENV 385-1	Architectural Engineering and Design 1: Fundamentals
CIV_ENV 385-2	Architectural Engineering & Design 2: Intermediate
CIV_ENV 385-3	Architectural Engineering & Design 3: Advanced Studio
<i>Architecture History - 2 units<sup>3</sup></i>	
CIV_ENV 220-0	Structural Art (required)
Choose 1 unit from the list of courses below	
ART_HIST 232-0	Introduction to the History of Architecture: 1400 to Present
ART_HIST 370-1	Architecture & Landscapes, 1750–1890
ART_HIST 370-2	Architecture & Landscapes, 1890 to Present
ART_HIST 378-0	The Global City
<i>Design and Analysis Techniques - choose 3 units</i>	
CIV_ENV 323-0	Structural Steel Design
CIV_ENV 325-0	Reinforced Concrete
CIV_ENV 352-0	Foundation Engineering
CIV_ENV 353-0	Energy Geostructures & Geosystems

### Additional Conditions for Awarding Minor in AED

- Course with grades lower than a "C" or taken P/N will not be acceptable for this minor.
- For McCormick BS degrees, at least 4 courses used to meet the AED Minor requirements must not be counted towards the 16 units of major program requirements.
- To declare the AED minor, students should submit the minor declaration form in **MAS (McCormick Advising System)** no later than the end of their junior year.

<sup>1</sup> The AED seminar sequence spans the Fall, Winter, and Spring Quarters. It includes lectures from architects, engineers, and construction managers from renowned firms in the Chicago area and beyond, focusing on the large topic of sustainability in the built environment. The AED seminar is intended to be taken sequentially. It is strongly suggested to take the sequence in the senior year.

<sup>2</sup> The Design Studio courses are intended as a sequence and must be taken as such. It is strongly suggested to attend the sequence in the junior year.

<sup>3</sup> The Architecture History courses can be attended starting from the Sophomore year.

## Environmental Engineering Minor

The minor in environmental engineering provides students with a sampling of foundational courses in addition to two electives focusing on environmental chemistry, microbiology, or transport processes.

Course	Title
<b>Requirements (8 units)</b>	
<i>Core Courses (6 units)</i>	
CIV_ENV 201-0	Engineering Possibilities: Decision Science in the Age of Smart Technologies
CIV_ENV 202-0	Biological and Ecological Principles
CIV_ENV 203-0	Earth in the Anthropocene
CIV_ENV 260-0	Environmental Systems and Processes
CIV_ENV 346-0	Ecohydrology
CIV_ENV 364-0	Sustainable Water Systems
<i>Electives (2 units): choose 2 courses from below</i>	
CIV_ENV 340-0	Hydraulics and Hydrology
CIV_ENV 361-1	Environmental Microbiology
CIV_ENV 361-2	Public & Environmental Health
CIV_ENV 366-0	Dynamics in Chemical Transport and Reaction
CIV_ENV 367-0	Chemical Processes in Aquatic Systems
CIV_ENV 368-0	Sustainability: The City
CIV_ENV 370-0	Emerging Organic Contaminants
CIV_ENV 398-1	Community-based Design 1
CIV_ENV 398-2	Community-based Design 2

CIV\_ENV 399-0 Projects<sup>1</sup>  
400-level course by permission

<sup>1</sup> Only 1 CIV\_ENV 399-0 Projects unit may be counted toward the minor.

#### Additional Conditions for this minor

- No more than 4 minor courses may be used to fulfill requirements in the student's major program.
- A grade of at least C– is required in each course for the minor.
- Students should discuss with the minor coordinator how best to satisfy prerequisites for required courses.
- To declare the Environmental Engineering minor, students should submit the minor declaration form in **MAS (McCormick Advising System)** no later than the end of their junior year.

## Computer Engineering

See Electrical and Computer Engineering (p. 176).

## Computer Science

[mccormick.northwestern.edu/computer-science](http://mccormick.northwestern.edu/computer-science)

Computer science involves the understanding, use, and extension of computational ideas and their implementation. A Northwestern computer science graduate will

- Comprehend the breadth of computer science, its key intellectual divisions and questions, and its past and likely future influence on engineering, science, medicine, business, and law
- Approach problems from the algorithmic perspective, understanding the nature and broad reach of computation and how to apply it abstractly
- Approach problems from the systems perspective, understanding the evolving layers of the software/hardware stack and how to create, use, and extend them
- Approach problems from the perspective of artificial intelligence, understanding how to make progress in solving seemingly intractable problems
- Design and implement complex software systems, individually and as a team member
- Design and implement effective human-machine interfaces

Courses and undergraduate research opportunities focus on software, ranging from theoretical models to practical applications. They establish a common breadth of knowledge in computer science, allowing students flexibility in areas in which they choose to specialize, such as

- *Artificial intelligence*, including mobile robots with perceptual systems, models of memory and reasoning, knowledge representation, natural-language comprehension, planning, and problem solving
- *Computer systems*, including parallel, distributed, and real-time systems, performance evaluation, prediction, and scheduling
- *Networked systems*, including peer-to-peer computing, large-scale data storage, network security, and pervasive computing environments
- *Programming languages and compilers*, including semantics, optimization, and software
- *Human-computer interaction*, including interface design, task modeling, intelligent interfaces, and authoring tools

- *Distributed interactive systems*, including client-server and web-based applications such as heterogeneous databases and multimedia learning environments
- *Theoretical computer science*, focusing on algorithm design and analysis of algorithms' worst- and average-case behavior
- *Intelligent information systems*, including "frictionless" proactive systems and context- and task-sensitive retrieval systems
- *Computer graphics and human-computer interfaces* for spatial applications, visualization, and computer entertainment

## Programs of Study

- Computer Science Degree (p. 173)
- Computer Science Minor (McCormick School of Engineering) (p. 175)

**COMP\_SCI 101-0 Computer Science: Concepts, Philosophy, and Connections (1 Unit)** General introduction to historical and current intellectual questions in computer science. Theory, systems, artificial intelligence, interfaces, software development, and interactions with business, politics, law, medicine, engineering, and other sciences. *Social Behavioral Sciences Distro Area*

**COMP\_SCI 110-0 Introduction to Computer Programming (1 Unit)** Introduction to programming practice using a modern programming language. Analysis and formulation of problems for computer solution. Systematic design, construction, and testing of programs. Substantial programming assignments. Not to be taken for credit with or after COMP\_SCI 111-0. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**COMP\_SCI 111-0 Fundamentals of Computer Programming (1 Unit)** Fundamental concepts of computer programming with heavy emphasis on design of recursive algorithms and test-driven development. Functional, imperative, and object-oriented programming paradigms. Procedural abstraction, data abstraction, and modularity. Required for the computer science degree. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**COMP\_SCI 130-0 Tools and Technology of the World-Wide Web (1 Unit)** Introduction to the theory and practice of developing sites on and technology for the web. Basics of HTML, JavaScript, ASP, and CGI programming.

**COMP\_SCI 150-0 Fundamentals of Computer Programming 1.5 (1 Unit)** An introduction to Object-oriented programming: focus on Python but including a brief introduction to a statically typed language (e.g. C++). Students will use some approaches from Artificial Intelligence and Machine Learning to complete programming assignments. Required for the computer science degree. Prerequisite: COMP\_SCI 110-0 or COMP\_SCI 111-0 or GEN\_ENG 205-1 or GEN\_ENG 206-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**COMP\_SCI 211-0 Fundamentals of Computer Programming II (1 Unit)** CS 211 teaches foundational software design skills at a small-to-medium scale. We aim to provide a bridge from the student-oriented How to Design Programs languages to real, industry-standard languages and tools. In the first half of the course, you'll learn the basics of imperative programming and manual memory management using the C programming language. In the second half of the course, we'll transition to C++, which provides abstraction mechanisms such as classes and templates that we use to express our design ideas. Topics include expressions, statements, types, functions, branches and iteration,

user-defined types, data hiding, basic UNIX shell usage, and testing.  
Prerequisite: COMP\_SCI 111-0 and COMP\_SCI 150-0.

**COMP\_SCI 212-0 Math Foundations of CS Part 1: Discrete Math for CS (1 Unit)** Basic concepts of finite and structural mathematics. Sets, axiomatic systems, the propositional and predicate calculi, and graph theory. Application to computer science: sequential machines, formal grammars, and software design. Syllabus - <https://www.mccormick.northwestern.edu/computer-science/academics/courses/descriptions/212.html>. Prerequisite: CS 110 or CS 111.

**COMP\_SCI 213-0 Introduction to Computer Systems (1 Unit)** The hierarchy of abstractions and implementations that make up a modern computer system; demystifying the machine and the tools used to program it; systems programming in C in the UNIX environment. Preparation for upper-level systems courses. Prerequisite: COMP\_SCI 211-0.

**COMP\_SCI 214-0 Data Structures & Algorithms (1 Unit)** Design, implementation, and performance analysis of abstract data types; data structures and their algorithms. Topics include fundamental collection classes, tree and graph representations and walks, search trees, sorting, priority queues and heaps, least-cost paths computations, and disjoint-set structures. Required for the computer science degree. Prerequisite: COMP\_SCI 111 and (COMP\_SCI 150 or COMP\_SCI 211).

**COMP\_SCI 217-0 Data Management & Information Processing (1 Unit)** This class offers a hands-on introduction to data representation, data modelling, and the SQL language for accessing and analyzing data in relational databases. Students access and analyze data in real-world large-scale databases from the public domain. Not for computer science or computer engineering degree candidates. Prerequisite: COMP\_SCI 110-0 or COMP\_SCI 111-0 or COMP\_SCI 150-0 or COMP\_SCI 211-0 or consent of instructor.

**COMP\_SCI 260-0 Introduction to Law and Digital Technologies (1 Unit)** Course summary: This course explores the legal implications of the contemporary technology landscape, including the growth of artificial intelligence, the ecosystem for creating and disseminating digital information, and the challenges of ensuring digital privacy and algorithm equity. The course aims to help students develop a broad, contextualized view of the legal and policy opportunities and challenges associated with rapid technological change. A key goal of the course is for students to acquire the skills to understand, contribute to, and shape the dialog on complex issues at the intersection of technology and law. Prerequisites: N/A. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**COMP\_SCI 262-0 Mathematical Foundations of Computer Science - Part 2 (1 Unit)** Mathematical Foundations of Computer Science (MFCS) sequence covers mathematical topics of probability, linear algebra, multivariable calculus and basic optimization that are crucial for many areas of modern computer science, including data science and machine learning. Unlike Part I of the MFCS sequence (CS212), this course will focus more on the above areas of continuous mathematics that are useful in computer science. Prerequisite: COMP\_SCI 212-0 or equivalent (Math 300-0).

**COMP\_SCI 295-0 Special Topics in Computer Science (1 Unit)** Topics suggested by students or faculty and approved by the department.

**COMP\_SCI 296-0 Intermediate Topics in Computer Science (1 Unit)** Topics suggested by faculty and approved by the department. Intended to apply toward advanced elective for the computer science major.

**COMP\_SCI 298-0 CS Research Track Program (1 Unit)** Topics suggested by faculty and approved by the department. Equivalent to CS 396 but

intended to apply toward advanced elective for the computer science major.

**COMP\_SCI 301-0 Introduction to Robotics Laboratory (1 Unit)** Lab-based introduction to robotics, focusing on hardware (sensors/actuators) and software (sensor processing/behavior development); motion control and planning; artificial intelligence; machine learning. Not open to graduate students except by consent of instructor. Prerequisites: COMP\_SCI 110 or COMP\_SCI 111 or COMP\_SCI 150 or MECH\_ENG 224, or permission of instructor.

**COMP\_SCI 303-0 Full Stack Software Engineering (1 Unit)** Modern software frameworks such as Next.js, Django, and Spring Boot provide the foundational components to quickly develop and deploy full-stack software applications. These frameworks, which are reusable abstractions of code wrapped in well-defined Application Programming Interfaces (APIs), provide several benefits for software developers, such as easier development and maintenance, standardization and compatibility, improved security, increased productivity, and easier collaboration. In this course we will explore one of these frameworks to create, iteratively refine, and deploy a real-world application. Prerequisite: Students must have completed COMP\_SCI 213-0 and 214-0 to enroll. CS MS and PhD students must receive instructor consent.

**COMP\_SCI 307-0 Introduction to Cryptography (1 Unit)** This course covers the basic knowledge in understanding and using cryptography. The main focus is on definitions, theoretical foundations, and rigorous proofs of security, with some programming practice. Topics include symmetric and public-key encryption, message integrity, hash functions, block-cipher design and analysis, number theory, and digital signatures.

Prerequisite: COMP\_SCI 212 or Instructor Consent.

**COMP\_SCI 308-0 Foundations of Security (1 Unit)** Cybersecurity can be an intimidating word, but it doesn't need to be. It is actually fundamental to every application or system we use, however small. One does not need to be "interested" in security to be accountable for creating secure programs; anyone who will be responsible for maintaining or building any computer systems will be accountable. Have you been or do you know anyone who has been a victim of a data breach? Data breaches have become commonplace with the causes often being a simple security mistake/piece of insecure infrastructure with a massive impact. Do you see yourself building a simple application that handles user data? You would have a responsibility to protect your users' data. Are you interested in cybersecurity as a specialization or career path? You'll probably get to advise the design of systems to be secure from the ground up and mitigate security incidents in real time. And finally: do you envision yourself in a role where you will either build or manage any systems that people will use? Then your systems need to be secure. Systems, software, and tools that we use are all vulnerable to security breaches and incidents. However, security, historically and still today, is often an afterthought in the design of computer systems, which only exacerbates their vulnerability. And while cybersecurity itself is a huge and exciting field for those interested, there are core aspects of security that are accessible to and necessary for anyone in a computing-related occupation.

**COMP\_SCI 310-0 Scalable Software Architectures (1 Unit)** Teaches software design principles for building high-scale Internet services. Focuses on challenges arising when assembling software services that run on many machines in parallel and which require the coordination of multiple software applications.

Prerequisites: CS 213 and 214 or CS MS or CS PhDs or Instructor permission.

**COMP\_SCI 311-0 Inclusive Making (1 Unit)**

Inclusive Making is about centering disability within computer science. The class explores the promises and shortcomings of making through a critical disability studies lens. It also looks at existing making practices within disability communities. Throughout the class, students reflect on their assumptions about disability and computer science, and wrestle with tensions related to making and accessibility alongside community organizations.

Prerequisites: COMP\_SCI 110 or COMP\_SCI 111 or COMP\_SCI MS or COMP\_SCI PhDs or Instructor consent.

#### **COMP\_SCI 312-0 Data Privacy (1 Unit)**

Data breaches, privacy breaches, and concerns about algorithmic decision-making have been on the rise. As a result, data privacy has become an increasingly significant concern in the past several years. Individuals and organizations often trust institutions with their data with the expectation that one's data is private from others or to the handling institutions and that it is not used for unfair practices. To ensure the privacy of sensitive data, privacy mechanisms have been developed to preserve the privacy of data without reducing its functionality. The goal of this course is to introduce you to the concept and implications of data privacy, including mechanisms and protocols that are used to preserve data privacy in practice. We will study concepts such as differential privacy, database anonymization, anonymous communication, and algorithmic fairness. We will also discuss privacy in the context of web privacy, social network privacy, human factors, and machine learning along with any policy implications.

Prerequisites: COMP\_SCI 211 and COMP\_SCI 212 and COMP\_SCI 214 or COMP\_SCI MS or COMP\_SCI PhDs or Instructor permission - (Programming experience and familiarity with basics of discrete math and statistics/probability).

**COMP\_SCI 313-0 Tangible Interaction Design and Learning (1 Unit)** The use of tangible interaction to create innovative learning experiences, including distributed cognition, embodied interaction, cultural forms, and design frameworks. Prerequisites: COMP\_SCI 110-0 or COMP\_SCI 111-0.

#### **COMP\_SCI 314-0 Technology and Human Interaction (1 Unit)**

Understanding human interactions that occur both with and through technology; design, creation, and evaluation of technologies to support such interactions.

#### **COMP\_SCI 315-0 Design, Technology, and Research (1 Unit)**

Hands-on experience in the research learning environment. Students lead research projects in social and crowd computing, cyber-learning, human-computer interaction, and artificial intelligence.

Prerequisite: consent of instructor (by application only).

#### **COMP\_SCI 320-0 Proving Properties of Programs with Mechanized Logic (1 Unit)**

This course will explore the state of the art in how to implement and prove facts about software. We will focus on small, functional programs and expressing properties of them via an (extremely) sophisticated dependent type system. By the end of this course, expect to have a better understanding of how to think about properties of programs, how to write code that demonstrates that those properties are true, and some experience programming in Agda.

Prerequisite: Students must have completed COMP\_SCI 212 and 321, be a MS CS Student and have completed 321, or be a CS PhD student to enroll.

#### **COMP\_SCI 321-0 Programming Languages (1 Unit)**

Introduction to key parts of programming languages: syntax, semantics, and pragmatics. Implementation of a series of interpreters that show how various aspects of programming languages behave.

Prerequisites: COMP\_SCI 111 and, COMP\_SCI 211, and COMP\_SCI 214 or COMP\_SCI MS or COMP\_SCI PhDs or Instructor permissiong.

#### **COMP\_SCI 322-0 Compiler Construction (1 Unit)**

The compiler is the programmer's primary tool. Understanding the compiler is therefore critical for programmers, even if they never build one. Furthermore, many design techniques that emerged in the context of compilers are useful for a range of other application areas. This course introduces students to the essential elements of building a compiler: parsing, context-sensitive property checking, code linearization, register allocation, etc. To take this course, students are expected to already understand how programming languages behave, to a fairly detailed degree. The material in the course builds on that knowledge via a series of semantics preserving transformations that start with a fairly high-level programming language and culminate in machine code.

Prerequisite: COMP\_SCI 213-0 and COM\_SCI 214-0 or consent of instructor.

#### **COMP\_SCI 323-0 Code Analysis and Transformation (1 Unit)**

Fast, highly sophisticated code analysis and code transformation tools are essential for modern software development. Before releasing its mobile apps, Facebook submits them to a tool called Infer that finds bugs by static analysis, i.e., without even having to run the code, and guides developers in fixing them. Google Chrome and Mozilla Firefox analyze and optimize JavaScript code to make browsers acceptably responsive. Performance-critical systems and application software would be impossible to build and evolve without compilers that derive highly optimized machine code from high-level source code that humans can understand. Understanding what modern code analysis and transformation techniques can and can't do is a prerequisite for research on both software engineering and computer architecture since hardware relies on software to realize its potential. In this class, you will learn the fundamentals of code analysis and transformation, and you will apply them by extending LLVM, a compiler framework now in production use by Apple, Adobe, Intel and other industrial and academic enterprises.

Prerequisites: COMP\_SCI 213-0 and COM\_SCI 214-0 or consent of instructor.

#### **COMP\_SCI 324-0 Dynamics of Programming Languages (1 Unit)**

The goal of this course is to introduce you to the semantics of programming languages (PLs). While CS 321 explains the meaning for different PL features, such as store and control, through interpreters, this course gives them meaning using simple math. And by simple, I mean as simple as high-school algebra. Hence, the course will help you build a foundational understanding of PLs by breaking them down to their most basic ingredients without having to go through PLAI or another meta language. In other words, the course will teach you how to construct mathematical models of PLs. Moreover, because of their mathematical and foundational nature, these models will enable you to describe precisely properties of PLs that in CS 321 we only talked about in an intuitive manner.

Prerequisite: CS 321 or CS PhD or Permission Instructor.

#### **COMP\_SCI 325-0 Artificial Intelligence Programming (1 Unit)**

Introduction to LISP and programming knowledge-based systems and interfaces. Strong emphasis on writing maintainable, extensible systems. Topics include semantic net-works, frames, pattern matching, deductive inference rules, case-based reasoning, and discrimination trees. Project-driven. Substantial programming assignments.

Prerequisite: COMP\_SCI 110-0, COMP\_SCI 111-0, or programming experience.

#### **COMP\_SCI 326-0 Introduction to the Data Science Pipeline (1 Unit)**

This course aims to cover various tools in the process of data science for obtaining, cleaning, visualizing, modeling, and interpreting data. Most of

the tools introduced in this course will be based on Python, although the idea can be applied to similar tools in other programming languages. As the outcome of this course, the students should be able to independently work on real-life datasets with large scales and gain insights from them. Prerequisites: CS 212 and CS 214 or COMP\_SCI MS or COMP\_SCI PhDs or Instructor consent.

#### **COMP\_SCI 327-0 Generative Methods (1 Unit)**

Generative Methods are algorithms which can be used to create. Programmers use grammars to make humorously chatty Twitterbots, Voronoi diagrams to create virtual cities and landscapes, and machine learned models to generate realistic oil portraits from selfies. This class will explore a range of different methods and tools, exposing you to the modern cutting edge of creative coding as you develop your own portfolio of JS/HTML apps.

Prerequisites: CS 111 and 150 or Instructor consent.

#### **COMP\_SCI 329-0 HCI Studio (1 Unit)**

Human-Computer Interaction (HCI) serves as the bridge between computing and humanity. In this class we will develop our critical thinking skills by learning effective structures for designing HCI systems. We will also soften into a deeper understanding of people's problems by developing our capacities for humility, empathy, and curiosity. Learning occurs through instructional activities, team projects, and studio critique. Prerequisite: CS 214 and has not completed CS 330 or Graduate Standing and has not completed CS 330.

#### **COMP\_SCI 330-0 Human Computer Interaction (1 Unit)**

Introduction to human-computer interaction and design of systems that work for people and their organizations. Understanding the manner in which humans interact with and use computers for productive work. For more detail - <https://www.mccormick.northwestern.edu/computer-science/academics/courses/descriptions/330-1.html>.

Prerequisite: CS 214 and has not completed CS329 or Graduate Standing and has not completed CS 329.

#### **COMP\_SCI 331-0 Introduction to Computational Photography (1 Unit)**

Fundamentals of digital imaging and modern camera architectures. Hands-on experience acquiring, characterizing, and manipulating data captured using a modern camera platform.

Prerequisite: COMP\_SCI 150 or COMP\_SCI 211 or Consent of Instructor.

#### **COMP\_SCI 332-0 Online Markets (1 Unit)**

Online markets are causing significant changes to society. Examples include eBay, airBnB, tinder, Uber, stackexchange, and Amazon. This class gives an introduction to the science of online markets combining topics from game theory and economics with topics from machine learning and algorithms. The two main topics of interest are how individuals in these market places optimize their strategies and how the market designer optimizes the rules of the market place so that, when individuals optimize their strategies, desired market outcomes are achieved. Student work will be a mix of problem sets and short projects.

Prerequisites: CS 212 (Discrete Math) and CS 214 (Data Structures) or CS 336 (Algorithms) or ECON 380-1 (Game Theory).

#### **COMP\_SCI 333-0 Interactive Information Visualization (1 Unit)**

This course covers theory and techniques for information visualization: the use of interactive interfaces to visualize abstract data. The course targets students interested in using visualization in their work or in building better visualization tools and systems. Students will learn to design and implement effective visualizations, critique others' visualizations, conduct exploratory visual analysis, and navigate research on information visualization.

Prerequisites: COMP\_SCI 214-0 or consent of instructor.

#### **COMP\_SCI 334-0 Introduction to Computational Linguistics (1 Unit)**

Hands-on introduction to computational methods in empirical linguistic analysis and natural language processing. Topics include language modeling, text classification, linguistic annotation, computational semantics, and machine translation. Students will implement and apply computational models to real linguistic datasets, and conclude the course with a final project.

Prerequisite: COMP\_SCI 110 or COMP\_SCI 111 or be a graduate COMP\_SCI student or have permission of Instructor.

#### **COMP\_SCI 335-0 Introduction to the Theory of Computation (1 Unit)**

Mathematical foundations of computation, including computability, relationships of time and space, and the P vs. NP problem.

Prerequisite: COMP\_SCI 212-0 or consent of instructor.

#### **COMP\_SCI 336-0 Design & Analysis of Algorithms (1 Unit)**

Analysis techniques: solving recurrence equations. Algorithm design techniques: divide and conquer, the greedy method, backtracking, branch-and-bound, and dynamic programming. Sorting and selection algorithms, order statistics, heaps, and priority queues.

Prerequisite: COMP\_SCI 111-0, COMP\_SCI 212-0, or CS Graduate Standing or consent of instructor.

#### **COMP\_SCI 337-0 Natural Language Processing: Classical Approaches (1 Unit)**

Semantics-oriented introduction to natural language processing, broadly construed. Representation of meaning and knowledge inference in story understanding, script/frame theory, plans and plan recognition, counter-planning, and thematic structures.

Prerequisite: COMP\_SCI 348-0 or consent of instructor.

#### **COMP\_SCI 338-0 Practicum in Intelligent Information Systems (1 Unit)**

A practical excursion into building intelligent information systems. Students develop a working program in information access, management, capture, or retrieval. Project definition, data collection, technology selection, implementation, and project management.

#### **COMP\_SCI 339-0 Introduction to Database Systems (1 Unit)**

Data models and database design. Modeling the real world: structures, constraints, and operations. The entity relationship to data modeling (including network hierarchical and object-oriented), emphasis on the relational model. Use of existing database systems for the implementation of information systems.

Prerequisites: COMP\_SCI 214-0 and (COMP\_SCI 213-0 or COMP\_ENG 205-0) or CS Graduate Standing.

#### **COMP\_SCI 340-0 Introduction to Networking (1 Unit)**

A top-down exploration of networking using the five-layer model and the TCP/IP stack, covering each layer in depth. Students build web clients, servers, and a TCP implementation and implement routing algorithms.

Prerequisites: COMP\_SCI 214-0 and (COMP\_SCI 213-0 or COMP\_ENG 205-0).

#### **COMP\_SCI 341-0 Social Networks Analysis (1 Unit)**

The use of social network analysis to understand the growing connectivity and complexity in the world around us on different scales, ranging from small groups to the World 'Wide Web. How we create social, economic, and technological networks, and how they enable and constrain attitudes and behaviors. Taught with IEMS 341-0; may not receive credit for both courses.

**COMP\_SCI 341-SA Social Networks Analysis (1 Unit)** The use of social network analysis to understand the growing connectivity and complexity in the world around us on different scales, ranging from small groups to the World 'Wide Web. How we create social, economic, and technological networks, and how they enable and constrain attitudes and behaviors.

Restricted to students participation in Northwestern study abroad programs.

#### **COMP\_SCI 343-0 Operating Systems (1 Unit)**

Fundamental overview of operating systems, including: concurrency (processes, synchronization, semaphores, monitors, deadlock); memory management (segmentation, paging virtual memory policies); software system architectures (level structures, microkernels); file systems (directory structures, file organization, RAID); protection (access control, capabilities, encryption, signatures, authentication). Requires substantial programming projects.

Prerequisites: COMP\_SCI 214-0 and COMP\_SCI 213-0, or COMP\_SCI 214-0 and COMP\_ENG 205-0.

#### **COMP\_SCI 344-0 Design of Computer Problem Solvers (1 Unit)**

Principles and practice of organizing and building artificial intelligence reasoning systems. Pattern-directed rule systems, truth-maintenance systems, and constraint languages.

Prerequisites: COMP\_SCI 348-0 and COMP\_SCI 325-1 or equivalent LISP experience.

#### **COMP\_SCI 345-0 Distributed Systems (1 Unit)**

Basic principles behind distributed systems (collections of independent components that appear to users as a single coherent system) and main paradigms used to organize them.

Prerequisites: COMP\_SCI 213-0 and COMP\_SCI 214-0.

#### **COMP\_SCI 346-0 Microcontroller System Design (1 Unit)**

Structure and timing of typical microprocessors. Sample microprocessor families. Memories, UARTS, timer/counters, serial devices, and related devices. MUX and related control structures for building systems. Standard bus structures. Interrupt programming. Hardware/software design tradeoffs. For syllabus, please visit - <https://www.mccormick.northwestern.edu/computer-science/academics/courses/descriptions/346.html>.

Prerequisites: COMP\_SCI 211 and (COMP\_SCI 213 or COMP\_ENG 205).

**COMP\_SCI 347-0 Conversational AI (1 Unit)** Principles and practices of creating AI systems which interact with people through conversations. This includes knowledge-rich natural language understanding, multimodal interactions (i.e. speech and sketching), principles of dialogue drawn from cognitive science, question-answering, and architectures for building conversational AI systems. Involves substantial programming and project work. Class sessions include both lectures and studio instruction. Prerequisites: COMP\_SCI 371 or permission of instructor.

#### **COMP\_SCI 348-0 Introduction to Artificial Intelligence (1 Unit)**

Core techniques and applications of AI. Representing, retrieving, and applying knowledge for problem solving. Hypothesis exploration. Theorem proving. Vision and neural networks.

Prerequisites: COMP\_SCI 111 and COMP\_SCI 214 or COMP\_SCI 111 and CogSci major or COMP\_SCI MS or COMP\_SCI PhDs or Instructor permission.

#### **COMP\_SCI 349-0 Machine Learning (1 Unit)**

Study of algorithms that improve through experience. Topics typically include Bayesian learning, decision trees, genetic algorithms, neural networks, Markov models, and reinforcement learning. Assignments include programming projects and written work.

Prerequisites: COMP\_SCI grad standing OR (COMP\_SCI 214 and (MATH 240-0 or GEN\_ENG 205-1 or GEN\_ENG 206-1) and (IEMS 201-0 or IEMS 303-0 or ELEC\_ENG 302-0 or STAT 210-0 or MATH 310-1)).

#### **COMP\_SCI 350-0 Introduction to Computer Security (1 Unit)**

Basic principles and practices of computer and information security. Software, operating system, and network security techniques, with

detailed analysis of real-world examples. Topics include cryptography, authentication, software and operating system security (e.g., buffer overflow), Internet vulnerability (DoS attacks, viruses/worms, etc.), intrusion detection systems, firewalls, VPN, and web and wireless security.

Prerequisite: COMP\_SCI 213-0 or equivalent or consent of instructor; COMP\_SCI 340-0 highly recommended.

#### **COMP\_SCI 351-1 Introduction to Computer Graphics (1 Unit)**

Mathematical software and hardware requirements for computer graphics systems. Data structures and programming languages. Random displays. Graphic applications.

Prerequisite: COMP\_SCI 214-0 or Graduate standing.

#### **COMP\_SCI 351-2 Intermediate Computer Graphics (1 Unit)**

Methods and theory of computer graphics. Project-oriented approach. Describing shapes, movement, and lighting effects; interactive elements. Prerequisites: COMP\_SCI 214-0 and COMP\_SCI 351-1 or Graduate standing.

#### **COMP\_SCI 352-0 Machine Perception of Music & Audio (1 Unit)**

Machine extraction of musical structure in audio and MIDI and score files, covering areas such as source separation and perceptual mapping of audio to machine-quantifiable measures.

Prerequisite: COMP\_SCI 211-0 and COMP\_SCI 214-0.

#### **COMP\_SCI 353-0 Natural & Artificial Vision (1 Unit)**

This course covers the mathematical operations underlying computer vision and their embodiment in naturally-occurring visual systems. Students will learn basics of image processing, neuroscience, and computational imaging.

#### **COMP\_SCI 354-0 Computer System Security (1 Unit)**

The past decade has seen an explosion in the concern for the security of information. This course introduces students to the basic principles and practices of computer system and networking security, with detailed analysis of real-world examples and hands-on practice. Topics include the basic crypto, authentication, reverse engineering, buffer overflow attacks, vulnerability scanning, web attacks, firewalls, intrusion detection/prevention systems, etc. We will first introduce the basic theory for each type of attack; then we will actually carry them out in 'real-world' settings. The goal is to learn security by learning how to view your machine from a hacker's perspective. In addition, we encourage students to participate in the UCSB International Capture the Flag Competition. Capture the Flag is a network security exercise where the goal is to exploit other machines while defending your own. In fact, this course should prepare you for any one of many capture the flag competitions that take place year-round. We will learn about different types of hacks and perform them. After learning how to execute such exploits and penetrate a network, we will discuss ways to protect a network from others exploiting the same vulnerabilities. Understanding security is essential in all fields of software development and computing. For major or minors in Computer Science, this course can satisfy the system breadth.

Prerequisite: COMP\_SCI 211-0 and COMP\_SCI 213-0 or COMP\_SCI 211-0 and COMP\_ENG 205-0.

#### **COMP\_SCI 355-0 Digital Forensics and Incident Response (1 Unit)**

This course aims to teach students the concepts of Digital Forensics and Incident Response. The technical content taught in the class consists of deep knowledge of filesystems and operating systems so that students know which digital artifacts to investigate in data breach scenarios. Labs and assignments are a sanitized version of real-world intrusions by nation-state actors and cybercriminals.

Prerequisites: COMP\_SCI 213-0 and COMP\_SCI 354-0 or COMP\_SCI 213-0 and COMP\_SCI 343-0.

### **COMP\_SCI 362-0 Foundations of Quantum Computing and Quantum Information (1 Unit)**

This course will be an introduction to the theory of quantum computation from a computer science perspective. Quantum computing holds great promise for obtaining substantial computational improvements over classical computing for many problems. In this course, we will cover the basics of quantum computation, and different topics that explore both the capabilities and limitations of quantum computers. Topics will include (subject to change) the basics of quantum information, quantum circuits, quantum algorithms, quantum complexity theory, quantum query complexity, and quantum communication complexity. No knowledge of quantum mechanics is required. We will cover the necessary physics concepts that are needed for this course.

### **COMP\_SCI 367-0 Wireless and Mobile Health: Passive Sensing Data Analytics (1 Unit)**

A hands-on introduction and experience to the growing field of mobile Health. Students work together on a project with clinicians and faculty in medicine, building a unique mHealth system while testing their system on a small population. Theory-driven project hypothesis, technology selection and development, passive sensing data analytic chain understanding and implementation, and project management.

### **COMP\_SCI 368-0 Programming Massively Parallel Processors with CUDA (1 Unit)**

This course focuses on developing and optimizing applications software on massively parallel graphics processing units (GPUs). Such processing units routinely come with hundreds to thousands of cores per chip and sell for a few hundred to a few thousand dollars. The massive parallelism they offer allows applications to run 2x-450x faster than on conventional multicores. However, to reach this performance improvement, the application must fully utilize the computational, storage and communication resources provided by the device. This course discusses state-of-the-art parallel programming optimization methods to achieve this goal.

Prerequisites: COMP\_SCI 213 and (COMP\_SCI 211 or COMP\_SCI 230) or consent of instructor.

### **COMP\_SCI 370-0 Computer Game Design (1 Unit)**

Plot, narrative, and character simulation for creating game worlds; artificial intelligence for synthetic characters; tuning gameplay. Substantial programming and project work.

Prerequisites: COMP\_SCI 214-0; 1 unit of COMP\_SCI 322-0, COMP\_SCI 343-0, COMP\_SCI 348-0, or COMP\_SCI 351-1, COMP\_SCI 351-2.

### **COMP\_SCI 371-0 Knowledge Representation and Reasoning (1 Unit)**

Principles and practices of knowledge representation, including logics, ontologies, commonsense knowledge, and semantic web technologies. Prerequisites: COMP\_SCI 348-0 or COMP\_SCI 325, or equivalent experience with artificial intelligence.

### **COMP\_SCI 372-0 Designing and Constructing Models with Multi-Agent Languages (1 Unit)**

This course will begin with an introduction to the multi-agent language NetLogo. Students will design and implement several NetLogo models and analyze their behavioral regimes. Students will also learn to build models of interaction on social networks (or other types of networks). We will cover methodology for verifying, validating and replicating agent-based models and comparisons with systems dynamics and equation-based models. NetLogo comes with many extensions that support a variety of additional features. Students can use these extensions to create specialized models, such as complex networks, real-time data extraction, data mining, connections to physical devices, etc.. Students will also have an opportunity to explore existing and create their own participatory simulations using the HubNet

architecture as well as exploring connecting real world sensors and motors to models. Students can also explore multi-level agent-based modeling in which hundreds or thousands of models are connected with NetLogo's LevelSpace extension. Prerequisite: Senior Comp\_sci or Senior Comp\_Eng or Consent of instructor.

### **COMP\_SCI 374-0 Causal Graphical Models (1 Unit)**

We know that correlation does not imply causation, but careful analyses of correlations are often our only way to quantify cause and effect in domains ranging from healthcare to education. This courses introduces causal inference methods, primarily using probabilistic graphical models, to identify and estimate counterfactual quantities as functions of observational data. We will discuss common challenges to causal inference, including confounding bias, missing data, measurement error, and selection bias. The final project will allow students to choose a dataset on which to perform a causal data analysis.

### **COMP\_SCI 376-0 Computer Game Design and Development (1 Unit)**

Introduction to design of simulation-based media, with an emphasis on 2D game design. Mathematical preliminaries: linear, affine, and projective spaces, linear transforms, inner and exterior products, unit quaternions; Architecture: update/render loop, component systems, serialization and deserialization, event handling and asynchronous processing, multitasking; Rendering: scene graphs, meshes, shaders, sprites; Networking; Audio; Physics: particles, rigid bodies, collision detection; Gameplay design.

Prerequisite: COMP\_SCI 214-0.

### **COMP\_SCI 377-0 Game Design Studio (1 Unit)**

In this course, students will design and develop games using the Unity game engine, with focus on team-based projects and agile development practices. Lectures will cover game design theory, game architecture and implementation, and the business of game development. Students will participate in class discussion and evaluation of projects in progress, to develop their skills in iterative design and implementation.

Prerequisite: COMP\_SCI 214 and COMP\_SCI 376-0.

### **COMP\_SCI 388-0 Software Engineering Beyond Programming (1 Unit)**

Many important issues and tradeoffs in software engineering appear only once projects reach a certain scale: large codebases, large teams, long periods of time. In this class, we will study a number of such issues, as well as practices and processes to help manage them.

*Registration is By Application Only*

### **COMP\_SCI 392-0 Rapid Prototyping for Software Innovation (1 Unit)**

This is a course about developing working prototypes of full-stack mobile web software applications in rapid iterations. Teams design and implement three distinct applications over ten weeks. These projects are the context for introducing (1) cross-functional team development, (2) lean agile value-first product development, and (3) specific web application frameworks and development tools, such as React, Firebase, Cypress, and Github Actions for continuous integration.

Prerequisites: CS junior, senior, or graduate OR permission of the instructor. Familiarity with JavaScript and HTML is presumed.

### **COMP\_SCI 393-0 Software Construction (1 Unit)**

Building software is a craft that requires careful design. This course teaches software design principles in a studio setting. Each week, students present their programs to the class for review. Together, the class evaluates the programs for correctness and, more importantly, clarity and design. Expect to learn how to build reliable, maintainable, extensible software and how to read others' codes.

Prerequisites: COMP\_SCI 211-0 and COMP\_SCI 214-0.

### **COMP\_SCI 394-0 Agile Software Development (1 Unit)**

Developing mobile and web applications, using modern sustainable agile practices, such as backlogs, user stories, velocity charts, and test driven development, to deliver value as quickly as possible to end users, clients, developers, and the development organization.

Prerequisites: Consent of instructor.

#### **COMP\_SCI 396-0 Special Topics in Computer Science (1 Unit)**

Topics suggested by faculty and approved by the department. Equivalent to 397 but intended to apply toward courses for the computer science major.

#### **COMP\_SCI 397-0 Special Projects in Computer Science (1 Unit)**

Projects suggested by faculty and approved by the department. Equivalent to 396 but intended to apply toward courses for the computer science major and its project requirement.

**COMP\_SCI 399-0 Projects (1 Unit)** Seminar and projects for advanced undergraduates on subjects of current interest in electrical and computer engineering.

## **Computer Science Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Requirements (48 units)**

#### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses</b>	
MATH 220-1	Single-Variable Differential Calculus
MATH 220-2	Single-Variable Integral Calculus
MATH 228-1	Multivariable Differential Calculus for Engineering
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
<b>4 units of basic science chosen according to McCormick basic science guidelines (p. 144)</b>	
<b>4 engineering analysis and computer proficiency courses</b>	
GEN_ENG 205-1 & GEN_ENG 205-2 & GEN_ENG 205-3 or GEN_ENG 206-1 & GEN_ENG 206-2 & GEN_ENG 206-3	Engineering Analysis I and Engineering Analysis II and Engineering Analysis III Honor Engineering Analysis and Honors Engineering Analysis and Honors Engineering Analysis
COMP_SCI 111-0	Fundamentals of Computer Programming <sup>2</sup>
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

#### **Major Program (21 units)**

Course	Title	
<b>5 required courses</b>		
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5	
COMP_SCI 211-0	Fundamentals of Computer Programming II	
COMP_SCI 213-0	Introduction to Computer Systems	
COMP_SCI 214-0	Data Structures & Algorithms	
COMP_SCI 262-0	Mathematical Foundations of Computer Science - Part 2 or IEMS 201-0 or IEMS 303-0 or ELEC_ENG 302-0 or STAT 210-0	Introduction to Statistics Statistics Probabilistic Systems Introduction to Probability and Statistics
<b>3 advanced elective courses</b>		

Any 300-level or higher class, or introductory courses that directly support computer science (COG\_SCI 207-0, COMP\_ENG 203-0, COMP\_ENG 205-0, COMP\_SCI 260-0, COMP\_SCI 296-0, COMP\_SCI 298-0, MECH\_ENG 233-0)

**5 breadth courses chosen from the options below**

**6 technical electives chosen from the options below**

**2 project courses chosen from the options below**

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> COMP\_SCI 110-0 Introduction to Computer Programming may be used as an unrestricted elective if taken before COMP\_SCI 111-0 Fundamentals of Computer Programming. It may not, however, be applied to the computer science major requirements.

## **Breadth Courses**

Majors must take one course from each area. Minors must take one course from each of any three areas.

### **Theory**

Course	Title
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms

### **Systems**

Course	Title
COMP_SCI 322-0	Compiler Construction
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
COMP_SCI 440-0	Advanced Networking
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 443-0	Advanced Operating Systems
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I

### **Artificial Intelligence**

Course	Title
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

### **Interfaces**

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research

COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 370-0	Computer Game Design
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 376-0	Computer Game Design and Development
COMP_SCI 377-0	Game Design Studio
ELEC_ENG 332-0	Introduction to Computer Vision

COMP_SCI 397-0	Special Projects in Computer Science
COMP_SCI 412-0	Data Privacy
COMP_SCI 415-0	Design, Technology, and Research
COMP_SCI 433-0	Wireless Protocols for the Internet of Things
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 445-0	Internet-scale Experimentation
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_SCI 461-0	Deep Learning for Natural Language Processing
COMP_SCI 497-0	Special Projects in Computer Science
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 366-0	Embedded Systems
COMP_ENG 466-0	Embedded Systems
ELEC_ENG 332-0	Introduction to Computer Vision

## Software Development and Programming Languages

Course	Title
COMP_SCI 310-0	Scalable Software Architectures
COMP_SCI 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development

## Project Courses

Majors must take two courses from this list.

### Project course list

Course	Title
COMP_SCI 311-0	Inclusive Making
COMP_SCI 312-0	Data Privacy
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 322-0	Compiler Construction
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 351-2	Intermediate Computer Graphics
COMP_SCI 354-0	Computer System Security
COMP_SCI 355-0	Digital Forensics and Incident Response
COMP_SCI 367-0	Wireless and Mobile Health: Passive Sensing Data Analytics
COMP_SCI 370-0	Computer Game Design
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development

## Technical electives

Majors must take six technical electives. Any 300- or 400-level COMP\_SCI course may be taken as a technical elective. In addition the following courses may also be taken as technical electives:

Course	Title
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 329-0	The Art of Multicore Concurrent Programming
COMP_ENG 334-0	Fundamentals of Blockchains and Decentralization
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 355-0	ASIC and FPGA Design
COMP_ENG 356-0	Introduction to Formal Specification & Verification
COMP_ENG 357-0	Design Automation in VLSI
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I
COMP_ENG 362-0	Computer Architecture Projects
COMP_ENG 364-0	CyberPhysical Systems Design and Application
COMP_ENG 365-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 366-0	Embedded Systems
COMP_ENG 368-0	Programming Massively Parallel Processors with CUDA
COMP_ENG 452-0	Adv Computer Architecture
COMP_ENG 453-0	Parallel Architectures
COMP_ENG 456-0	Modern Topics in Computer Architecture
COMP_ENG 459-0	VLSI Algorithms
COMP_ENG 464-0	Cyber-Physical Systems Design and Application
COMP_ENG 465-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 466-0	Embedded Systems
COMP_ENG 468-0	Programming Massively Parallel Processors with CUDA
ELEC_ENG 326-0	Electronic System Design I
ELEC_ENG 332-0	Introduction to Computer Vision
ELEC_ENG 375-0	Machine Learning: Foundations, Applications, and Algorithms
ELEC_ENG 433-0	Statistical Pattern Recognition
ELEC_ENG 435-0	Deep Learning: Foundations, Applications, and Algorithms

## Note

Courses that fulfill the breadth and project courses also fulfill the technical elective requirement. However, a given course may only be applied to a single requirement for the major. In such cases where a single course could be applied to multiple requirements, a student must

choose which requirement to apply a given course to. A course may not be counted toward multiple requirements at once.

## Concentrations

Computer Science students have the option to declare one concentration from the list below, to highlight specialization in a specific sub-field of computer science:

- Artificial Intelligence
- Systems
- Foundations
- Security and Privacy
- Software Engineering and Programming Languages
- Robotics
- Computer Hardware and Architecture
- Human-Computer Interaction

To fulfill a concentration, a student must complete four classes from that concentration's list of courses within their 21 Major Program Courses (CS Advanced Electives, Breadth, Project and Technical Electives).

The list of courses for each concentration, as well as the full details and requirements for concentrations can be found on the Computer Science department web site (<https://www.mccormick.northwestern.edu/computer-science/academics/undergraduate/bachelors/>).

## Computer Science Minor (McCormick School of Engineering)

The department offers a minor in computer science for students who wish to develop stronger competence in computer science while pursuing a degree in another field. The minor will provide essential knowledge for all computer scientists as well as exposure to every critical subfield of the discipline.

Students should begin the minor before the end of their first quarter of their junior year. To declare the McCormick Computer Science minor, students should submit the minor declaration form in **MAS (McCormick Advising System)** by the end of their junior year. At least 4 courses used for the minor may not be used (double-counted) to fulfill requirements in the student's 21-unit major program.

Course	Title
<b>Prerequisites (6 units)</b>	
MATH 220-1	Single-Variable Differential Calculus
MATH 220-2	Single-Variable Integral Calculus
MATH 228-1	Multivariable Differential Calculus for Engineering

Engineering Analysis (3 units):

GEN_ENG 205-1 & GEN_ENG 205-2 & GEN_ENG 205-3 or GEN_ENG 206-1 & GEN_ENG 206-2 & GEN_ENG 206-3	Engineering Analysis I and Engineering Analysis II and Engineering Analysis III Honor Engineering Analysis and Honors Engineering Analysis and Honors Engineering Analysis
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**Minor Requirements (9 units)**

<i>Core Courses (6 units of computer science)</i>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
COMP_SCI 213-0	Introduction to Computer Systems

COMP_SCI 214-0	Data Structures & Algorithms
<i>Breadth Courses (3 units from three different areas, see below)</i>	

## Breadth Courses

Majors must take one course from each area. Minors must take one course from each of any three areas.

### Theory

Course	Title
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms

### Systems

Course	Title
COMP_SCI 322-0	Compiler Construction
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
COMP_SCI 440-0	Advanced Networking
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 443-0	Advanced Operating Systems
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I

### Artificial Intelligence

Course	Title
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

### Interfaces

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 370-0	Computer Game Design
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 376-0	Computer Game Design and Development

COMP_SCI 377-0	Game Design Studio
ELEC_ENG 332-0	Introduction to Computer Vision

## Software Development and Programming Languages

Course	Title
COMP_SCI 310-0	Scalable Software Architectures
COMP_SCI 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development

## Curious Life Certificate

The Curious Life Certificate (CLC) begins with a foundational experience called PATH. PATH will be taken as a CLC gateway course by first- and second-year students introducing them to a holistic approach to their performance as it relates to both their academic and personal life at Northwestern.

Course	Title
<b>Certificate Requirements (4 units)</b>	
<i>CLC Foundational Course:</i>	
PRDV 200-0	PATH (Personal Development Studio Lab) (0 units)
<i>Emotional Intelligence (1 credit unit)</i>	
PRDV 325-0	Emotional Intelligence 101 - Managing Yourself, Maximizing Your Potential
<i>Physical Sensations (1 credit unit)</i>	
PRDV 345-0	Whole-Body Thinking: Collaborative Problem Solving through Partner Dancing
PRDV 395-0	Special Topics in Personal Development
THEATRE 171-0	Basic Acting
<i>Additional courses by petition</i>	
<i>Your Stories (1 credit unit)</i>	
PRDV 335-1 & PRDV 335-2	Engineering Improv I: The Art of Allowing and Engineering Improv II: The Art of Application (each 0.5 units)
SLAVIC 210-1 or SLAVIC 210-2 or SLAVIC 210-3	Introduction to Russian Literature
THEATRE 332-1	The Art of Storytelling
<i>Additional courses by petition</i>	
<i>Certificate Capstone Requirement (1 credit unit)</i>	
PRDV 300-0	Designing Your Life

Smaller in scope than majors or minors, certificates usually are offered in areas of concentration for which no major or minor exists and are comprised of at least 4 units of coursework uniquely counted, not also applied to any other academic plan or credential. Such coursework may fulfill McCormick Social Sciences/Humanities (Theme), WCAS distribution requirements, or other unrestricted electives. Certificates are conferred concurrent with the student's undergraduate degree. They do not appear on the diploma, but are noted on the transcript.

Students can declare the certificate and submit updates to their courses in MAS (McCormick Advising System) (<https://mas.mccormick.northwestern.edu/>) before the beginning of their final quarter as undergraduates.

## Design Engineering (Engineering Design)

See Segal Design Institute (p. 204)(including the Bachelor of Science in Manufacturing and Design Engineering as well as the Segal Design Certificate).

## Electrical and Computer Engineering

[mccormick.northwestern.edu/electrical-computer](http://mccormick.northwestern.edu/electrical-computer)

The Department of Electrical and Computer Engineering offers two programs for undergraduate students leading to the bachelor of science degree in electrical engineering and the bachelor of science degree in computer engineering. It also offers graduate programs leading to the MS and PhD degrees in those areas. The department boasts an internationally renowned faculty, state-of-the-art research equipment, and the considerable resources offered by a great university. It combines these advantages with an uncommon commitment to students.

The department offers several interdisciplinary options, including premedical/biomedical studies.

## Electrical Engineering

Electrical engineering involves the development and application of electronic and optical technologies for generating, communicating, and processing information. The electrical engineering curriculum includes courses in electronic circuits, solid-state electronics, electromagnetics, optics, lasers, controls, digital signal processing, communications and networks. Students may specialize in any of the following areas.

### Circuits and Electronics

This area of study is concerned with the analysis and design of circuits that employ electronic devices, such as integrated circuits, transistors, diodes, light-emitting diodes, data-storage elements, and image-forming devices. Important applications include radio, television, digital computers, and electronic control instrumentation systems.

### Communications Systems

A communication system involves the generation of an electrical signal representing information to be transmitted, its encoding in some form for efficient transmission, its actual transmission, its decoding at the receiving end of the system, and its reconversion into something intelligible to the user. This subject also covers the design and analysis of communication networks for the transmission of audio, video, and data among many users.

### Control Systems

The study of control systems deals with the analysis and design of automatic regulators, guidance systems, numerical control of machines, robotics, and computer control of industrial processes. Students are concerned with identifying these systems and with such topics as system stability, system performance criteria, and optimization. These concepts find application in other fields of engineering and in the development of better understanding of biological, energy, economic, and social systems.

### Signal Processing and Machine Learning

Study in this area focuses on the digital representation and algorithmic manipulation of speech, audio, image, and video signals. Specific topics within this general area include image and video processing, recovery and

compression, multimedia signal processing, filter design and rank-order operators, image and video transmission, medical and biomedical signal processing, medical imaging, and algorithms for medical instrumentation.

## **Electromagnetics and Photonics**

Study in the area of photonic systems and technology focuses on microcavity lasers, nanostructures, quantum and nonlinear optics, integrated optics, fiber-optic and infrared waveguide devices, fiber-optic communications, computational electromagnetics, and imaging through turbulence. Special emphases include applications of novel quantum amplifiers in optical communications, imaging, and cryptography; devices for high-speed optical networks; and applications of computational techniques in integrated and nonlinear optics.

## **Solid-State Engineering**

This area is concerned with the design, physical principles, and applications of solid-state devices both as discrete units and integrated circuit systems. In addition to the various diode, transistor, and FET devices fabricated from silicon technology, devices developed from compound semiconductor materials are reviewed. Both analog and digital circuit applications are stressed. Another important topic is the behavior of conductors in the superconducting state, with a stress on applications.

## **Computer Engineering**

Computer engineering deals with digital design, computer hardware and architecture, robotics, microprocessors, software and programming, and the interrelationships between hardware and software. The computer engineering curriculum involves courses in digital logic, electronic circuits, computer architecture, robotics, VLSI design, VLSI CAD, software programming, operating systems, microprocessor systems, and parallel computing. The computer engineering curriculum allows students to develop a particular specialization in the following areas.

### **Embedded Systems**

This area focuses on the use of digital hardware to monitor and control physical systems. Topics include discrete dynamics systems, digital controllers, analog-to-digital converters, microprocessor based design, and the economic trade-offs of different software and hardware systems.

### **High-Performance Computing**

This area introduces students to the field of state-of-the-art high-performance computing. In particular, it deals with aspects of computing involving multiple processors working together on a common problem, including issues of computer architecture, parallel programming and algorithms, numerical computing, and computer networking.

### **Software**

This area exposes students to concepts and skills necessary to implement and understand computer software. Students are taught how to design and analyze efficient algorithms, how to develop operating systems and compilers, and how to write programs using efficient data structures and software engineering practices.

### **VLSI and Computer-Aided Design**

This area focuses on systematic approaches to designing high-performance integrated circuits consisting of millions of transistors. This specialization includes topics such as low-power, high-speed, and reliable circuit design, hardware-software codesign, design verification, design of field-programmable gate array (FPGA), and computer-aided design (CAD) techniques.

## **Facilities**

Students have access to state-of-the-art research and teaching facilities, ranging from laboratories for electronic devices to parallel computers and worldwide distributed testbeds.

Electrical engineering facilities include laboratories for electronic circuits, digital circuits, solid-state electronics, fabrication of solid-state lasers and other quantum electronic/photonics devices, thin-film device development, biomedical electronics, microwave techniques, holography and coherent light optics, biological and other control systems, and signal, image, and speech processing.

Computer engineering facilities include laboratories in digital systems design, microprocessor systems, microprogramming, robotics, computer-aided design, and computer networking.

The department has major research facilities for work in parallel computing systems, embedded systems, computer vision, VLSI design, electronic design automation, robotics, solid-state devices, fiber optics, lasers, computational electromagnetics, electronic materials, and biomedical engineering.

## **Programs of Study**

- Computer Engineering Degree (p. 181)
- Electrical Engineering Degree (p. 182)

### **COMP\_ENG 203-0 Introduction to Computer Engineering (1 Unit)**

Overview of computer engineering design. Number systems and Boolean algebra. CMOS and logic gates. Design of combinational circuits and simplification. Decoders, multiplexers, adders. Sequential logic and flip flops. Introduction to assembly language.

### **COMP\_ENG 205-0 Fundamentals of Computer System Software (1 Unit)**

Basics of assembly language programming. Macros. System stack and procedure calls. Techniques for writing assembly language programs. Features of Intel x86 architecture. Interfaces between C and assembly codes. Prerequisite: COMP\_SCI 111-0 or GEN\_ENG 205-1; COMP\_ENG 203-0 recommended.

### **COMP\_ENG 295-0 Special Topics in Computer Engineering (1 Unit)**

Topics suggested by students or faculty and approved by the department.

### **COMP\_ENG 303-0 Advanced Digital Design (1 Unit)**

Overview of digital logic design. Technology review. Delays, timing in combinational and sequential circuits, CAD tools, arithmetic units such as ALUs and multipliers. Introduction to VHDL.

Prerequisite: COMP\_ENG 203-0.

### **COMP\_ENG 329-0 The Art of Multicore Concurrent Programming (1 Unit)**

Concurrency disciplines and practical programming techniques for multicore processors; synchronization primitives, mutual exclusion, foundation of shared memory, locking, non-blocking synchronization, and transactional memory.

Prerequisite: COMP\_SCI 110-0 or COMP\_SCI 111-0.

### **COMP\_ENG 334-0 Fundamentals of Blockchains and Decentralization (1 Unit)**

This course is partly an introduction to the fundamentals of blockchains and decentralized applications and partly a springboard toward deeper understanding and further exploration. The course explains how blockchains work; teaches the underlying fundamentals of distributed consensus; provides hands-on experience through computer assignments; and also touches upon economic and policy issues.

Prerequisites: COMP\_SCI 212-0 or ELEC\_ENG 302-0 or equivalent or graduate standing and basic programming skills.

#### **COMP\_ENG 346-0 Microcontroller System Design (1 Unit)**

Design of hardware and software systems built around microcontrollers. Standard peripherals such as GPIO, timers, and analog inputs. Communication interfaces such as UART, I2C, and SPI. Sensors and device driver design, including interrupts, DMA, and synchronous versus asynchronous design choices. Embedded software development. Hardware/software design tradeoffs.

Prerequisites: COMP\_SCI 211-0 and (COMP\_ENG 205-0 or COMP\_SCI 213-0).

#### **COMP\_ENG 347-1 Microprocessor Systems Project I (1 Unit)**

Design, prototype and test individual projects involving microprocessors and related devices such as PAL/FPGA and special purpose ICs. Embedded-system tools such as special purpose compilers and ICE (in-circuit emulation). Manufacturing issues such as PCB layout. Survey of microprocessor platforms. Part I deals with specification and design. Prerequisite: COMP\_ENG 346-0.

#### **COMP\_ENG 347-2 Microprocessor Systems Project II (1 Unit)**

Design, prototype and test individual projects involving microprocessors and related devices such as PAL/FPGA and special purpose ICs. Embedded-system tools such as special purpose compilers and ICE (in-circuit emulation). Manufacturing issues such as PCB layout. Survey of microprocessor platforms. Part II deals with implementation, testing, and documentation. Prerequisite: COMP\_ENG 347-1.

#### **COMP\_ENG 355-0 ASIC and FPGA Design (1 Unit)**

Overview of computer-aided design tool flow for ASIC and FPGA design. Synthesis from hardware description languages and creation of finite-state machines. Differences between FPGA and ASIC design flows. Exploration of concepts in several projects. Prerequisite: COMP\_ENG 303-0.

#### **COMP\_ENG 356-0 Introduction to Formal Specification & Verification (1 Unit)**

Introduction to formal techniques used for system specifications and verifications: temporal logic, set theory, proofs, and model checking. TLA+ (Temporal Logic of Actions) specifications. Safety and liveness properties. Real-time specs and verifications.

#### **COMP\_ENG 357-0 Design Automation in VLSI (1 Unit)**

VLSI physical design, including logic design, architectural design, and packaging. Development of CAD tools for VLSI physical design. Prerequisites: COMP\_SCI 214-0, COMP\_ENG 303-0.

#### **COMP\_ENG 358-0 Introduction to Parallel Computing (1 Unit)**

Introduction to parallel computing for scientists and engineers. Shared-memory parallel architectures and programming, distributed memory, message-passing data-parallel architectures, and programming. Prerequisite: COMP\_SCI 211-0 or graduate standing.

#### **COMP\_ENG 361-0 Computer Architecture I (1 Unit)**

Design and understanding of the computer system as a whole unit. Performance evaluation and its role in computer system design; instruction set architecture design, data-path design and optimizations (e.g., ALU); control design; single cycle, multiple cycle, and pipeline implementations of processor. Hazard detection and forwarding; memory hierarchy design; cache memories, virtual memory, peripheral devices, and I/O. Prerequisites: (COMP\_ENG 205-0 or COMP\_SCI 213-0) AND (COMP\_ENG 303-0 or COMP\_ENG 355-0).

#### **COMP\_ENG 362-0 Computer Architecture Projects (1 Unit)**

Quarter-long team project designing a processor for a complete instruction set. Involves ISA design, design of components, data-path, and control for a pipelined processor to implement the ISA. Use of industrial-strength design tools and VHDL as the design specification language. Designs are evaluated using benchmark programs for correctness and performance. Prerequisite: COMP\_ENG 361-0.

**COMP\_ENG 364-0 CyberPhysical Systems Design and Application (1 Unit)** This course will introduce trends and challenges of modern cyber-physical systems, and review state-of-the-art design paradigms and tools in academia and industry. It will introduce fundamental concepts in the modeling of cyber-physical systems, important models of computation such as dataflow, state machine, and synchronous-reactive semantics, real-time embedded architectures, and synthesis methodologies for generating efficient, correct, and predictable implementations.

**COMP\_ENG 365-0 Internet-of-things Sensors, Systems, And Applications (1 Unit)** In-depth review of advanced technology surrounding the Internet-of-Things; including wireless sensing networks, wearables, drones, privacy, machine learning, and energy-efficient computing. Application domains in health, infrastructure monitoring, green computing and others are explored. Following a seminar format with alongside exploration of new research areas through a project proposal.

**COMP\_ENG 366-0 Embedded Systems (1 Unit)** Introduction to the design and evaluation of embedded systems, with emphasis on the system-level aspects of embedded systems. Topics include modeling (models of computation and models of communication), survey of embedded system hardware, software and operating system issues specific to embedded system design, mapping specifications to hardware, and testing and evaluation of embedded systems.

#### **COMP\_ENG 368-0 Programming Massively Parallel Processors with CUDA (1 Unit)**

A hands-on introduction to parallel programming and optimizations for 1000+ core GPU processors, their architecture, the CUDA programming model, and performance analysis. Students implement various optimizations in massively-parallel workloads on modern GPUs. May not receive credit for both COMP\_ENG 368-0 and COMP\_ENG 468-0. Prerequisites: (COMP\_SCI 213-0 and (COMP\_SCI 211-0 or COMP\_SCI 230-0)) or permission of instructor.

#### **COMP\_ENG 369-0 Introduction to Sensor Networks (1 Unit)**

Basic hardware and software platforms for sensor networks. Various algorithmic techniques for data routing, query processing, and tracking. Prerequisite: COMP\_SCI 343-0 or COMP\_SCI 340-0.

#### **COMP\_ENG 387-0 Real-Time Digital Systems Design and Verification with FPGAs (1 Unit)**

This course covers the systematic design of real-time digital systems and verification techniques using field-programmable gate arrays (FPGAs) and presents a top-down design methodology where students learn how to translate software applications in high-level level languages (such as C/C++) into SystemVerilog models for FPGA architectures. Prerequisite: COMP\_ENG 303-0 and COMP\_ENG 355-0.

#### **COMP\_ENG 391-0 CMOS VLSI Circuit Design (1 Unit)**

Design of modern CMOS very large-scale integrated (VLSI) circuits.

#### **COMP\_ENG 392-0 VLSI Systems Design Projects (1 Unit)**

Design of a cutting-edge VLSI chip. Teams of 5 to 10 students undertake a large circuit design problem, going from specification to VLSI implementation while optimizing for speed, area, and/or power. Group collaboration and engineering design. Prerequisite: COMP\_ENG 391-0 or COMP\_ENG 355-0.

**COMP\_ENG 393-0 Advanced Low Power VLSI and Mixed-signal IC Design (1 Unit)**

This course provides an in-depth review of the advanced technology in integrated circuit design. Special focuses will be given to ultra-low power circuit design, error resilient circuit design, machine learning accelerators, power management circuits and basic design of analog mixed-signal circuit. Following a seminar format, detailed case study on circuit design techniques used by Intel, IBM, etc. will be discussed.

**COMP\_ENG 395-0 Special Topics in Computer Engineering (1 Unit)**

Topics suggested by students or faculty and approved by the department.

**COMP\_ENG 399-0 Projects (1 Unit)** Seminar and projects for advanced undergraduates on subjects of current interest in electrical and computer engineering.

**ELEC\_ENG 100-0 Electrons, Photons, and Bits: Adventures in Electrical and Computer Engineering (1 Unit)** Introduction to contemporary topics in electrical engineering (5 weeks) and computer engineering (5 weeks) via lectures, demonstrations, and lab tours. No exams, but two in-depth term papers are required: the first on an electrical engineering topic reviewed during the first half of the course, and the second on a computer engineering topic reviewed during the second half of the course.

**ELEC\_ENG 195-0 Special Topics in Electrical Engineering (1 Unit)** Topics suggested by students or faculty and approved by the department.

**ELEC\_ENG 202-0 Introduction to Electrical Engineering (1 Unit)**

Introduction to fundamental concepts and applications of electrical engineering. Topics include: circuit analysis from dc resistive networks to networks of impedances operating in the sinusoidal steady-state; circuit simplification and the Thevenin equivalent circuit; complex numbers and phasors; series and parallel inductor-capacitor resonance; simple analog filters; power transfer and impedance matching; op amps realizing active filters; signal spectra and the Fourier transform; signal sampling and aliasing; bandwidth and channel capacity; simple feedback and control systems; semiconductor electronics and devices including diodes, transistors, light-emitting diodes, and lasers.

**ELEC\_ENG 221-0 Fundamentals of Circuits (1 Unit)** Fundamental concepts in electrical circuits; circuit analysis and network theorems; linearity and superposition; series/parallel combinations of R, L, and C circuits; sinusoidal forcing; complex frequency and Bode plots; mutual inductance and transformers; two port networks. Prerequisite: ELEC\_ENG 202-0.

**ELEC\_ENG 222-0 Fundamentals of Signals & Systems (1 Unit)**

Comprehensive introduction to analysis of continuous and discrete-time signals and systems. Linear time-invariant systems, convolution. Fourier series representations of periodic signals. Continuous and discrete-time Fourier transforms. Laplace transform; z-transform. Prerequisite: ELEC\_ENG 202-0.

**ELEC\_ENG 223-0 Fundamentals of Solid State Engineering (1 Unit)**

Crystalline state of matter; quantum phenomena and quantum mechanics; electrons in atoms, atoms in crystals, electrons in crystals; semiconductors; thermal properties of crystals, electrical properties of crystals and semiconductors; pn junction. Prerequisites: ELEC\_ENG 202-0; PHYSICS 135-3; MATH 228-2.

**ELEC\_ENG 224-0 Fund of Electromagnetics & Photonics (1 Unit)**

Introduction to electromagnetic waves in electrical engineering. Topics include: analysis of transmission lines in the time domain and the sinusoidal steady-state; fundamentals of electrostatics and magnetostatics; Maxwell's equations for time-varying electromagnetic fields; plane electromagnetic wave propagation, reflection, and transmission at material interfaces; Poynting's theorem; introduction

to fiber optics and photonics. Prerequisites: (ELEC\_ENG 202-0 and ELEC\_ENG 221-0 and PHYSICS 135-2 and MATH 228-2) or consent of instructor.

**ELEC\_ENG 225-0 Fundamentals of Electronics (1 Unit)** Diode, BJT, and FET circuits; design using ideal operational amplifiers; feedback; frequency response; biasing; current sources and mirrors; small-signal analysis; design of operational amplifiers. Prerequisites: ELEC\_ENG 221-0.

**ELEC\_ENG 250-0 Physical Electronics and Devices (1 Unit)** The physical basis of electronic and optoelectronic devices and their application in analog and digital systems. Diodes, transistors, LEDs, photodetectors, and lasers are described, and their properties explored. Prerequisites: ELEC\_ENG 221-0; PHYSICS 135-2.

**ELEC\_ENG 295-0 Special Topics in Electrical Engineering (1 Unit)** Topics suggested by students or faculty and approved by the department.

**ELEC\_ENG 302-0 Probabilistic Systems (1 Unit)**

Introduction to probability theory and its applications. Axioms of probability, distributions, discrete and continuous random variables, conditional and joint distributions, correlation, limit laws, connection to statistics, and applications in engineering systems. Students may not receive credit for both ELEC\_ENG 302-0 and any of the following: IEMS 302-0; MATH 310-1; MATH 311-1; MATH 314-0; MATH 385-0; STAT 320-1; STAT 383-0. Corequisite: MATH 228-2 or equivalent.

**ELEC\_ENG 307-0 Communications Systems (1 Unit)**

This course covers the fundamentals of modern communications. Specifically, this course explores design principles and performance considerations for communication systems, and provides insight into design challenges for next-generation communication systems and data networks.

Prerequisites: ELEC\_ENG 222-0, ELEC\_ENG 302-0 or equivalent.

**ELEC\_ENG 308-0 Applied Electromagnetics and Photonics (1 Unit)**

Electromagnetic wave behavior and design of metallic, dielectric, and optical waveguides and antennas and antenna arrays. Electromagnetic wave fundamentals of wireless communications systems and radar techniques.

Prerequisite: ELEC\_ENG 224-0.

**ELEC\_ENG 326-0 Electronic System Design I (1 Unit)**

This fast-paced course will teach a student how to go from a project idea to a fully functional prototype implementation. This involves a printed circuit design using PCB CAD software, surface mount soldering, MCU programming, CAD design for 3D printing, and web design. This course has been approved as an Electrical Engineering Technical Elective to be included in the 2020-2021 Catalog. Current electrical engineering students can petition to use it as a technical elective.

Prerequisite: Students must have completed (ELEC\_ENG 225-0 and COMP\_SCI 211-0), or MECH\_ENG 333-0, or graduate standing, or instructor consent.

**ELEC\_ENG 327-0 Electronic System Design II: Project (1 Unit)**

This course puts to practice the knowledge gained in Electronic System Design I, and have students create a fully functional prototype implementation. This involves the same principles as in Electronic System Design I, but more independently, and with some design optimization. The course will also focus on team management and presentation skills, culminating in a project fair to the public. For a student with senior standing, this course can count towards the Design Degree Requirement in EE.

Prerequisite: ELEC\_ENG 326-0 or instructor consent.

**ELEC\_ENG 328-0 Information Theory & Learning (1 Unit)** This course gives students analytical tools to quantify information, perform inference, and study the relationship of information and learning. The course covers information measures, the source and the channel coding theorems, statistical inference, and learning with neural networks. In particular, the course explores a common set of models and tools used by both machine learning and state-of-the-art data compression and error-control codes. This course is aimed at undergraduate students in engineering, science, mathematics, and computing. It expects familiarity with undergraduate-level calculus, probability theory, and linear algebra. Prerequisite: Basic probability theory (ELEC\_ENG 302-0 or equivalent).

**ELEC\_ENG 331-0 Introduction to Computational Photography (1 Unit)** Fundamentals of digital imaging and modern camera architectures. Hands-on experience acquiring, characterizing, and manipulating data captured using a modern camera platform. Prerequisite: COMP\_SCI 150 or COMP\_SCI 211 or Consent of Instructor.

**ELEC\_ENG 332-0 Introduction to Computer Vision (1 Unit)** Computer and biological vision systems, image formation, edge detection, image segmentation, texture, representation and analysis of two-dimensional geometric structures and of three-dimensional structures. Prerequisites: COMP\_SCI 212-0 or ELEC\_ENG 302-0 or equivalent or graduate standing.

**ELEC\_ENG 333-0 Introduction to Communication Networks (1 Unit)** Data communication basics. Telephone, cellular, cable, and computer networks. Layered network architectures, models, and protocols. Switching, routing, flow control, and congestion control. Medium access control, ARQ, and local area networks. Queuing models and network performance analysis. Prerequisite: ELEC\_ENG 302-0 or equivalent.

**ELEC\_ENG 334-0 Fundamentals of Blockchains and Decentralization (1 Unit)**

This course is partly an introduction to the fundamentals of blockchains and decentralized applications and partly a springboard toward deeper understanding and further exploration. The course explains how blockchains work; teaches the underlying fundamentals of distributed consensus; provides hands-on experience through computer assignments; and also touches upon economic and policy issues. Prerequisites: COMP\_SCI 212-0 or ELEC\_ENG 302-0 or equivalent or graduate standing and basic programming skills.

**ELEC\_ENG 335-0 Deep Learning Foundations from Scratch (1 Unit)**

The course covers the fundamentals of deep learning and numerical optimization, with many application examples.

**ELEC\_ENG 353-0 Digital Microelectronics (1 Unit)**

Logic families, comparators, A/D and D/A converters, combinational systems, sequential systems, solid-state memory, largescale integrated circuits, and design of electronic systems.

Prerequisites: COMP\_ENG 203-0, ELEC\_ENG 225-0.

**ELEC\_ENG 359-0 Digital Signal Processing (1 Unit)**

Discrete-time signals and systems. Discrete-time Fourier transform, z-transform, discrete Fourier transform, digital filters.

Prerequisite: ELEC\_ENG 222-0.

**ELEC\_ENG 360-0 Introduction to Feedback Systems (1 Unit)**

Linear feedback control systems, their physical behavior, dynamical analysis, and stability. Laplace transform, frequency spectrum, and root locus methods. System design and compensation using PID and lead-lag controllers. Digital implementations of analog controllers.

Prerequisite: ELEC\_ENG 222-0 or MECH\_ENG 390-0 or BMD\_ENG 309-0 or equivalent.

**ELEC\_ENG 363-0 Digital Filtering (1 Unit)**

Recursive and nonrecursive digital filters, decimation and interpolation, A/D and D/A conversion as digital filtering problems. Implementation of nonrecursive filters via FFT, quantization problems (e.g., companding and limit cycles).

Prerequisite: ELEC\_ENG 359-0.

**ELEC\_ENG 372-1 Robot Design Studio (1 Unit)**

In this course, teams of students will design and build robots. For instance, teams may build robots inspired by the Summer Olympics: a robot that can perform on the uneven bars, that can skate a half-pipe, or that can do flips on a BMX bike. The ultimate goal is to build a robust, elegant machine capable of performing exciting dynamic feats. Along the way, students will refine skills in mechatronics, electromechanical design, real-time programming, sensor selection and integration, motor/transmission design, and feedback control.

Prerequisite: Consent of Instructor.

**ELEC\_ENG 372-2 Robot Design Studio (1 Unit)**

In this course, teams of students will design and build robots. For instance, teams may build robots inspired by the Summer Olympics: a robot that can perform on the uneven bars, that can skate a half-pipe, or that can do flips on a BMX bike. The ultimate goal is to build a robust, elegant machine capable of performing exciting dynamic feats. Along the way, students will refine skills in mechatronics, electromechanical design, real-time programming, sensor selection and integration, motor/transmission design, and feedback control.

Prerequisite: ELEC\_ENG 372-1.

**ELEC\_ENG 373-0 Deep Reinforcement Learning (1 Unit)** Fundamentals of Deep Reinforcement Learning starting from its roots in dynamic

programming and optimal control, and ending with some of the most popular applications in practice today; basic Q-Learning algorithm and its extensions; deep Q-Learning. Through exercises and a final course project students will gain significant hands-on experience coding up and testing reinforcement systems on a variety of interesting problems. Prerequisites: ELEC\_ENG 375-0 and ELEC\_ENG 335-0.

**ELEC\_ENG 374-0 Introduction to Digital Control (1 Unit)**

Discrete dynamics systems; discrete models of continuous systems feedback and digital controllers; analog-digital conversion; digital control design including PID, lead/lag, deadbeat, and mode-matching controllers. Prerequisite: ELEC\_ENG 360-0.

**ELEC\_ENG 375-0 Machine Learning: Foundations, Applications, and Algorithms (1 Unit)** The course covers the fundamentals of machine learning and numerical optimization, with many application examples.

**ELEC\_ENG 378-0 Digital Communications (1 Unit)**

Sampling and time-division multiplexing, baseband digital signals and systems. Coded pulse modulation, error control coding, digital modulation systems, information measure and source encoding, and introduction to spread spectrum communications.

Prerequisite: ELEC\_ENG 302-0 or equivalent.

**ELEC\_ENG 379-0 Lasers and Coherent Optics (1 Unit)**

Optical resonators; fundamental operation of lasers; mode-locking and Q-switching; optical propagation and diffraction; Gaussian beams; thin-lens imaging; optical signal processing.

**ELEC\_ENG 380-0 Wireless Communications (1 Unit)**

Overview of existing and emerging wireless communications systems; interference, blocking, and spectral efficiency; radio propagation and

fading models; performance of digital modulation in the presence of fading; diversity techniques; code-division multiple access.  
Prerequisite: ELEC\_ENG 378-0.

#### **ELEC\_ENG 381-0 Electronic Properties of Materials (1 Unit)**

Fundamental properties of electrons in materials. Classical and quantum mechanical descriptions of free and bound electrons. Optical, electrical, thermal, and magnetic properties of materials. Microelectronic, optoelectronic, magnetic recording, superconductivity.  
Prerequisite: ELEC\_ENG 223-0 or consent of instructor.

#### **ELEC\_ENG 382-0 Photonic Information Processing (1 Unit)**

Introduction to photonic information processing; coherent and incoherent light; electro-optic and acousto-optic modulation; optical signal processing; holography; optical storage.  
Prerequisites: ELEC\_ENG 222-0 and ELEC\_ENG 224-0 or consent of instructor.

#### **ELEC\_ENG 383-0 Fiber-Optic Communications (1 Unit)**

Semiconductor diode lasers, internal modulation, electro-optic modulation, coherent and incoherent detection, optical fibers and their properties, optical amplifiers, communication systems, optical networks.  
Prerequisites: ELEC\_ENG 223-0, ELEC\_ENG 224-0.

#### **ELEC\_ENG 384-0 Solid State Electronic Devices (1 Unit)**

Energy-band model for semiconductors; carrier statistics and transport; diodes, bipolar and field-effect transistors; integrated circuits, optoelectronic and heterojunction devices.

Prerequisite: ELEC\_ENG 381-0 or consent of instructor.

#### **ELEC\_ENG 385-0 Optoelectronics (1 Unit)**

Introduction to solid-state optoelectronic devices; display devices, laser diodes, photodetectors, and light modulators; optical waveguides and fibers; system application of optoelectronic devices.

Prerequisite: ELEC\_ENG 381-0 or consent of instructor.

#### **ELEC\_ENG 387-0 Advanced Digital Systems Design with FPGAs (1 Unit)**

This course covers the systematic design of advanced digital systems using field programmable gate arrays (FPGAs). The course presents a top-down design methodology, where students learn how to translate software applications in high-level level languages (such as C/C++) into SystemVerilog models to run on FPGAs. The course focuses on designing real-time high-performance computing applications using industry-standard methodologies, with an emphasis on simulation-based verification and debugging.

#### **ELEC\_ENG 388-0 Nanotechnology (1 Unit)**

Physics and fabrication of photonic and electronic devices. Physics of semiconductors: crystal structures, reciprocal lattice, elements of quantum mechanics, heterojunctions, quantum wells, and superlattices. Bulk crystal, thin-film, and epitaxial growth technologies. Device processing technologies: diffusion oxidation, ion implantation, annealing, etching, and photolithography.

Prerequisite: ELEC\_ENG 223-0 or consent of instructor.

#### **ELEC\_ENG 389-0 Superconductivity and Its Applications (1 Unit)**

Properties of materials in the superconducting state; charge flow dynamics of type II superconductors; highTc superconductors; applications for computers and high-frequency devices.

Prerequisite: ELEC\_ENG 381-0 or consent of instructor.

#### **ELEC\_ENG 390-0 Introduction to Robotics (1 Unit)**

Homogeneous vectors and planes; homogeneous transformation, position and orientation transformations, kinematics and inverse kinematic solutions of robot manipulators; Jacobian and inverse Jacobian relation; robot trajectory and task planning; dynamic

formulation and computation of robot manipulators; robot programming and control systems.

Prerequisite: COMP\_SCI 230-0.

#### **ELEC\_ENG 395-0 Special Topics in Electrical Engineering (1 Unit)**

Topics suggested by students or faculty and approved by the department.

**ELEC\_ENG 398-0 Electrical Engineering Design (1 Unit)** Design of electrical and electronic devices, circuits, and systems by the application of the engineering sciences, economics, and Institute of Electrical and Electronics Engineers or other national standards. Prerequisite: senior standing.

**ELEC\_ENG 399-0 Projects (1 Unit)** Seminar and projects for advanced undergraduates on subjects of current interest in electrical and computer engineering.

## **Computer Engineering Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Requirements (48 units)**

#### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:</b>	
PHYSICS 135-2 & PHYSICS 135-3	General Physics and General Physics
PHYSICS 136-2 & PHYSICS 136-3	General Physics Laboratory and General Physics Laboratory
1.33 units chosen from McCormick-approved basic science categories of Chemistry, Physics, Biological Science, Earth & Planetary Science or Astronomy (p. 144) <sup>2</sup>	
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communication courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

### **Major Program (21 units)**

Course	Title
<b>10 required courses</b>	
COMP_ENG 203-0	Introduction to Computer Engineering
COMP_ENG 205-0	Fundamentals of Computer System Software
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 361-0	Computer Architecture I
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 211-0	Fundamentals of Computer Programming II
ELEC_ENG 202-0	Introduction to Electrical Engineering
ELEC_ENG 221-0	Fundamentals of Circuits
ELEC_ENG 302-0	Probabilistic Systems
1 additional course from a McCormick department at 200-level or higher comprised of 100% Engineering Topics based on ABET Course Partitioning Table	
<b>10 technical elective courses</b>	
<i>2 courses chosen from the options below</i>	
COMP_SCI 213-0	Introduction to Computer Systems
ELEC_ENG 222-0	Fundamentals of Signals & Systems
ELEC_ENG 223-0	Fundamentals of Solid State Engineering
ELEC_ENG 224-0	Fundamentals of Electromagnetics & Photonics
ELEC_ENG 225-0	Fundamentals of Electronics

5 courses from the areas below<sup>3</sup>

- Architecture and high-performance computing (see below)
- VLSI and CAD (see below)
- Embedded systems (see below)
- Software systems (see below)
- Networks and security (see below)

3 elective courses chosen from the options below

300-level technical courses in science, mathematics, computer science, or engineering <sup>4</sup>	
BIOL_SCI 201-0	Molecular Biology
BIOL_SCI 202-0	Cell Biology
BIOL_SCI 203-0	Genetics and Evolution
CHEM 215-1 & CHEM 215-2 & CHEM 215-3	Organic Chemistry I and Organic Chemistry II and Organic Chemistry III

1 design course chosen from the options below

COMP_ENG 347-1	Microprocessor Systems Project I
COMP_ENG 362-0	Computer Architecture Projects
COMP_ENG 392-0	VLSI Systems Design Projects

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

<sup>3</sup> Students may take any combination of courses from any subset of these technical areas which achieves the required total.

<sup>4</sup> No more than 2 units of COMP\_ENG 399-0 Projects will be counted as technical electives. Additional units of COMP\_ENG 399-0 Projects may be taken but will be counted as unrestricted electives.

## Area Electives

### Architecture and High-Performance Computing

Course	Title
COMP_ENG 329-0	The Art of Multicore Concurrent Programming
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 362-0	Computer Architecture Projects
COMP_ENG 368-0	Programming Massively Parallel Processors with CUDA
COMP_ENG 452-0	Adv Computer Architecture
COMP_ENG 453-0	Parallel Architectures
COMP_ENG 468-0	Programming Massively Parallel Processors with CUDA

### VLSI and CAD

Course	Title
COMP_ENG 355-0	ASIC and FPGA Design
COMP_ENG 357-0	Design Automation in VLSI
COMP_ENG 387-0	Real-Time Digital Systems Design and Verification with FPGAs
COMP_ENG 391-0	CMOS VLSI Circuit Design
COMP_ENG 392-0	VLSI Systems Design Projects
COMP_ENG 393-0	Advanced Low Power VLSI and Mixed-signal IC Design

COMP_ENG 459-0	VLSI Algorithmics
COMP_ENG 493-0	Advanced Low Power VLSI and Mixed-signal IC Design
ELEC_ENG 353-0	Digital Microelectronics

## Embedded Systems

Course	Title
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 347-1	Microprocessor Systems Project I
COMP_ENG 347-2	Microprocessor Systems Project II
COMP_ENG 364-0	CyberPhysical Systems Design and Application
COMP_ENG 365-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 366-0	Embedded Systems
COMP_ENG 369-0	Introduction to Sensor Networks
COMP_ENG 464-0	Cyber-Physical Systems Design and Application
COMP_ENG 465-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 466-0	Embedded Systems
COMP_SCI 301-0	Introduction to Robotics Laboratory
ELEC_ENG 326-0	Electronic System Design I
ELEC_ENG 327-0	Electronic System Design II: Project
ELEC_ENG 332-0	Introduction to Computer Vision
ELEC_ENG 360-0	Introduction to Feedback Systems
ELEC_ENG 390-0	Introduction to Robotics
ELEC_ENG 432-0	Advanced Computer Vision
MECH_ENG 333-0	Introduction to Mechatronics
MECH_ENG 433-0	Advanced Mechatronics

## Software Systems

Course	Title
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 321-0	Programming Languages
COMP_SCI 322-0	Compiler Construction
COMP_SCI 336-0	Design & Analysis of Algorithms
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 343-0	Operating Systems
COMP_SCI 394-0	Agile Software Development

## Networks and Security

Course	Title
COMP_ENG 334-0	Fundamentals of Blockchains and Decentralization
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
ELEC_ENG 333-0	Introduction to Communication Networks

## Electrical Engineering Degree

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### Requirements (48 units)

#### Core Courses (27 units)<sup>1</sup>

Course	Title
4 mathematics courses (p. 144)	
4 units of basic science: <sup>2</sup>	

PHYSICS 135-2 & PHYSICS 136-2	General Physics and General Physics Laboratory
PHYSICS 135-3 & PHYSICS 136-3	General Physics and General Physics Laboratory
1.33 units chosen from McCormick-approved basic science categories of Chemistry, Physics, Biological Science, Earth & Planetary Science or Astronomy (p. 144)	
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

## Major Program (21 units)

Course	Title
<b>10 required courses</b>	
COMP_ENG 203-0	Introduction to Computer Engineering
COMP_SCI 211-0 or COMP_SCI 150-0	Fundamentals of Computer Programming II Fundamentals of Computer Programming 1.5
ELEC_ENG 202-0	Introduction to Electrical Engineering
ELEC_ENG 221-0	Fundamentals of Circuits
ELEC_ENG 222-0	Fundamentals of Signals & Systems
ELEC_ENG 223-0	Fundamentals of Solid State Engineering
ELEC_ENG 224-0	Fundamentals of Electromagnetics & Photonics
ELEC_ENG 225-0	Fundamentals of Electronics
ELEC_ENG 302-0	Probabilistic Systems
1 additional McCormick course at 200-level or higher comprised of 100% Engineering Topics based on ABET Course Partitioning Table	
<b>10 technical elective courses<sup>3</sup></b>	
<i>6 courses chosen from the technical elective tracks below</i>	
Biomedical engineering track (p. 183)	
Circuits and electronics track (p. 183)	
Communications systems track (p. 183)	
Control systems track (p. 183)	
Signal processing and machine learning track (p. 183)	
Electromagnetics and optics track (p. 184)	
Solid-state engineering track (p. 184)	
2 courses at the 300- or 400-level in COMP_SCI, ELEC_ENG, or COMP_ENG technical electives (which may include COMP_ENG 205-0 and the courses above)	
<i>2 courses chosen from the options below</i>	
300-level technical courses in science, mathematics, computer science, or engineering or the courses above	
BIOL_SCI 201-0	Molecular Biology
BIOL_SCI 202-0	Cell Biology
BIOL_SCI 203-0	Genetics and Evolution
CHEM 215-1 & CHEM 215-2 & CHEM 215-3	Organic Chemistry I and Organic Chemistry II and Organic Chemistry III
<b>1 design course from the options below<sup>4</sup></b>	
COMP_ENG 347-1	Microprocessor Systems Project I
COMP_ENG 392-0	VLSI Systems Design Projects
ELEC_ENG 327-0	Electronic System Design II: Project
ELEC_ENG 398-0	Electrical Engineering Design
ELEC_ENG 399-0	Projects

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of

Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics for ISP Laboratory or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics for ISP Laboratory or PHYSICS 136-3 General Physics Laboratory.

<sup>3</sup> No more than 2 units of ELEC\_ENG 399-0 Projects will be counted as technical electives. Additional units of ELEC\_ENG 399-0 Projects may be taken but will be counted as unrestricted electives.

<sup>4</sup> When ELEC\_ENG 399-0 Projects is a design project and the student has senior standing

## Technical Elective Tracks

### Biomedical Engineering Track

Course	Title
BMD_ENG 325-0	Introduction to Medical Imaging
BMD_ENG 327-0	Magnetic Resonance Imaging
BMD_ENG 333-0	Modern Optical Microscopy & Imaging

### Circuits and Electronics Track

Course	Title
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 347-2	Microprocessor Systems Project II
COMP_ENG 355-0	ASIC and FPGA Design
COMP_ENG 391-0	CMOS VLSI Circuit Design
COMP_ENG 393-0	Advanced Low Power VLSI and Mixed-signal IC Design
ELEC_ENG 326-0	Electronic System Design I
ELEC_ENG 327-0	Electronic System Design II: Project
ELEC_ENG 353-0	Digital Microelectronics

### Communications Systems Track

Course	Title
ELEC_ENG 307-0	Communications Systems
ELEC_ENG 328-0	Information Theory & Learning
ELEC_ENG 333-0	Introduction to Communication Networks
ELEC_ENG 334-0	Fundamentals of Blockchains and Decentralization
ELEC_ENG 378-0	Digital Communications
ELEC_ENG 380-0	Wireless Communications

### Control Systems Track

Course	Title
ELEC_ENG 360-0	Introduction to Feedback Systems
ELEC_ENG 374-0	Introduction to Digital Control
ELEC_ENG 390-0	Introduction to Robotics
MECH_ENG 333-0	Introduction to Mechatronics

### Signal Processing and Machine Learning Track

Course	Title
ELEC_ENG 332-0	Introduction to Computer Vision
ELEC_ENG 335-0	Deep Learning Foundations from Scratch
ELEC_ENG 359-0	Digital Signal Processing
ELEC_ENG 363-0	Digital Filtering
ELEC_ENG 373-0	Deep Reinforcement Learning
ELEC_ENG 375-0	Machine Learning: Foundations, Applications, and Algorithms

## Electromagnetics Engineering Track

Course	Title
ELEC_ENG 308-0	Applied Electromagnetics and Photonics
ELEC_ENG 379-0	Lasers and Coherent Optics
ELEC_ENG 382-0	Photonic Information Processing
ELEC_ENG 383-0	Fiber-Optic Communications

## Solid-State Engineering Track

Course	Title
ELEC_ENG 250-0	Physical Electronics and Devices
ELEC_ENG 381-0	Electronic Properties of Materials
ELEC_ENG 384-0	Solid State Electronic Devices
ELEC_ENG 385-0	Optoelectronics
ELEC_ENG 388-0	Nanotechnology
MECH_ENG 381-0	Introduction to Micro-electro-mechanical Systems

# Engineering Sciences and Applied Mathematics

[mccormick.northwestern.edu/applied-math](http://mccormick.northwestern.edu/applied-math)

The Department of Engineering Sciences and Applied Mathematics offers coursework in applied mathematics and administers an undergraduate program leading to a BS in applied mathematics and a graduate program in applied mathematics.

The applied mathematics program is intended to provide the knowledge necessary for applying mathematical ideas and techniques to the problems that arise in engineering or science. It is expected that a student receiving a BS in applied mathematics would have the background for suitable employment in industry or for graduate study in either mathematics (pure or applied) or an engineering field, including computer science and operations research. To achieve these goals, the applied mathematics program is designed to be flexible and allow the student to concentrate a substantial part of the coursework either in mathematics or one or more areas of application.

## Program of Study

- Applied Mathematics Degree (p. 185)

**ES\_APPM 245-0 Elementary Applied Linear Algebra (1 Unit)** Basic linear algebra methods including basic matrix/vector operations, solution of linear systems of equations, eigenvalues, and singular values. Focus will be on applications of the methods on a range of engineering topics including: least squares and data fitting, game theory, graph theory, principal component analysis, linear programming, and other related engineering topics.

**ES\_APPM 252-1 Honors Calculus for Engineers (1 Unit)** Calculus sequence for the mathematically interested students who want to dig deeper, cover more mathematical material, and see more applications than the standard calculus sequence offers. It also provides an introduction to computation (no previous experience required). Satisfies the same requirements as Math 228-1,2.

**ES\_APPM 252-2 Honors Calculus for Engineers (1 Unit)** Calculus sequence for the mathematically interested students who want to dig deeper, cover more mathematical material, and see more applications than the standard calculus sequence offers. It also provides an introduction to computation (no previous experience required). Satisfies the same requirements as Math 228-1,2.

### ES\_APPM 311-0 Methods of Applied Mathematics (1 Unit)

Ordinary differential equations: review of elementary ODEs, initial and boundary value problems, Fredholm Alternative Theorem, Power series solution of ODEs, Special functions, Sturm-Liouville eigenvalue problems, Eigenfunction expansions, Fourier series. Partial Differential Equations: Classification, Heat, Wave and Laplace equations and their applications, Solution by separation of variables, Series solutions, Full and partial eigenfunction expansions.

Prerequisites: an elementary differential equations course, e.g., MATH 250-0 or GEN\_ENG 205-4 or GEN\_ENG 206-4.

### ES\_APPM 312-0 Complex Variables (1 Unit)

Imaginary numbers and complex variables, analytic functions, calculus of complex functions, contour integration with application to transform inversion, conformal mapping.

Prerequisite: GEN\_ENG 205-4, GEN\_ENG 206-4, or MATH 250-0.

### ES\_APPM 322-0 Applied Dynamical Systems (1 Unit)

Example-oriented survey of nonlinear dynamical systems, including chaos. Combines numerical exploration of differential equations describing physical problems with analytic methods and geometric concepts. Applications to mechanical, fluid dynamical, electrical, chemical, and biological systems.

Prerequisites: GEN\_ENG 205-4, GEN\_ENG 206-4, or MATH 250-0. ES\_APPM 311-1 is recommended.

### ES\_APPM 344-0 High Performance Scientific Computing (1 Unit)

Solving partial differential equations using high performance computing platforms. Basic C programming. Distributed computing using MPI. GPU programming using CUDA. Adaptation of algorithms for solving PDE's to different architectures.

### ES\_APPM 345-0 Applied Linear Algebra (1 Unit)

Understanding and implementation of algorithms to calculate matrix decompositions such as eigenvalue/vector, LU, QR, and SVD decompositions. Applications include data-fitting, image analysis, and ranking algorithms.

### ES\_APPM 346-0 Modeling and Computation in Science & Engineering (1 Unit)

Advanced techniques for initial value problems, differential algebraic systems, bifurcations, chaos, and partial differential equations. Applications drawn from different physical areas.

Prerequisites: MATH 228-2, MATH 240-0, and MATH 250-0; or GEN\_ENG 205-4 and PHYSICS 135-1, PHYSICS 135-2; or equivalent; familiarity with a programming language; or consent of instructor.

### ES\_APPM 370-1 Introduction to Computational Neuroscience (1 Unit)

From neurons to networks. Ion channels, Hodgkin-Huxley framework, simplified models, cable equation, synapses, spike triggered average, and optimal stimulus. Feedforward and recurrent firing rate networks. Statistical approach, Bayesian modeling. Brief introduction to numerical methods.

### ES\_APPM 372-0 Introduction to the Analysis of RNA Sequencing Data (1 Unit)

This course will give an introduction to the theory and practice of analyzing high-throughput RNA sequencing through lectures and hands-on exercises. The basic topics covered will include: 1) the format of/working with raw sequencing data; 2) aligning reads to a reference genome; 3) the format of/working with aligned SAM/BAM files; 4) different ways to perform read-based gene counting; 4) How to visually explore reads and read counts; 5) variance shrinkage and principal components; 6) The theory of/doing differential expression analysis. Additional topics will be covered as time permits, based in part upon the interests of the course participants.

### **ES\_APPM 375-1 Quantitative Biology I: Experiments, Data, Models, and Analysis (1 Unit)**

High-resolution, high-throughput, and dynamic imaging and sequencing data is the substrate of modern biology. The course consists of case-studies where we learn how to computational work with, analyze, and make sense of experimental dataset using fundamental principles of mathematics, statistics, and physics. No formal course prerequisites. Programming in python.

### **ES\_APPM 375-2 Quantitative Biology II: Experiments, Data, Models, and Analysis (1 Unit)**

High-resolution, high-throughput, and dynamic imaging and sequencing data is the substrate of modern biology. In this course we learn how to perform experiments, and computational work with, analyze, and make sense of experimental dataset using fundamental principles of mathematics, statistics, and physics. No formal course prerequisites. Programming in python.

### **ES\_APPM 395-0 Special Topics (1 Unit)**

#### **ES\_APPM 398-0 Introduction to Applied Math Research (0 Unit)**

This is a seminar course where ESAM faculty present their current and planned research topics in applied mathematics.

**ES\_APPM 399-0 Projects (1 Unit)** Special studies to be carried out under faculty direction. Credit to be arranged.

## **Applied Mathematics Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Requirements (48 units)**

#### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:<sup>2</sup></b>	
PHYSICS 135-2 & PHYSICS 135-3	General Physics and General Physics
<b>2 units chosen from McCormick-approved basic science courses</b>	
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communication courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

#### **Major Program (21 units)**

Course	Title
<b>5 basic technical courses</b>	
COMP_SCI 150-0 or COMP_SCI 211-0	Fundamentals of Computer Programming I.5 Fundamentals of Computer Programming II
Plus 4 courses from at least 3 different McCormick departments, Mathematics, Statistics, and Data Science (at 200-level or above)	
<b>7 engineering sciences and applied mathematics courses</b>	
ES_APPM 311-0	Methods of Applied Mathematics <sup>3</sup>
ES_APPM 312-0 or MATH 325-0	Complex Variables Complex Analysis
ES_APPM 322-0	Applied Dynamical Systems
ES_APPM 346-0	Modeling and Computation in Science & Engineering
ES_APPM 345-0 or MATH 334-0	Applied Linear Algebra Linear Algebra: Second Course
ES_APPM 421-1	Models in Applied Mathematics

1 additional unit of any 300- or 400-level ES\_APPM course

**1 probability and statistics course chosen from the options below<sup>4</sup>**

ELEC_ENG 302-0	Probabilistic Systems
IEMS 302-0	Probability (formerly IEMS 202-0)
IEMS 303-0	Statistics
MATH 310-1	Probability and Stochastic Processes
MATH 310-2	Probability and Stochastic Processes
MATH 310-3	Probability and Stochastic Processes

1 additional probability and statistics course chosen from the options above or 1 course chosen from the options below

IEMS 310-0	Operations Research
IEMS 313-0	Foundations of Optimization

**1 mathematical modeling course chosen from the options below**

ES_APPM 370-1 or ES_APPM 375-1 or ES_APPM 399-0 or ES_APPM 495-0	Introduction to Computational Neuroscience Quantitative Biology I: Experiments, Data, Models, and Analysis Projects Selected Topics in Applied Mathematics
ES_APPM 399-0, ES_APPM 495-0, or other modeling course subject to department pre-approval	

4 courses in engineering or the sciences at the 300 level or higher leading to an approved concentration<sup>4</sup>

2 technical electives at the 300 level or higher in engineering, science, or mathematics<sup>4</sup>

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3

Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

<sup>3</sup> Since ES\_APPM 311-0 Methods of Applied Mathematics is a required, Math 351 cannot be used to satisfy any ESAM degree requirements due to content overlap with ES\_APPM 311-0.

<sup>4</sup> Only one of the courses IEMS 302, Math 310-1 and ELEC\_ENG 302 can be taken for credit.

## **Environmental Engineering**

See Civil and Environmental Engineering (p. 157).

## **Farley Center for Entrepreneurship**

farley.northwestern.edu

The Farley Center for Entrepreneurship and Innovation evolves engineering beyond the application of the sciences to the creation of businesses that capitalize on innovations. We bring together faculty from an array of disciplines to develop a unique interdisciplinary curriculum in which students experience the entire entrepreneurial life cycle—from ideation to prototyping and business plan development.

## **Program of Study**

- Entrepreneurship Minor (p. 186)

**ENTREP 225-0 Principles of Entrepreneurship (1 Unit)** This course serves as the foundational course for the undergraduate minor in entrepreneurship. This survey-style course is a good choice for students who wish to familiarize themselves with the world of entrepreneurship. Students will learn to think like entrepreneurs and will be introduced to key topics relevant to entrepreneurship, including customer discovery, finance, and marketing. They will also learn how to understand and perform analyses of a broad range of entrepreneurial activities related to different applications of entrepreneurship. Taught with IEMS 225-0; may not receive credit for both courses.

#### **ENTREP 310-0 Personal Branding (1 Unit)**

This course meets a core requirement for the undergraduate minor in entrepreneurship. It is designed for freelancers, artists, and individual entrepreneurs who are looking to grow their careers. Students will learn how to use marketing and brand-building tactics in the service of their own goals and will be challenged to identify and pursue new professional opportunities. As part of their work in this course, students will create assets related to their developing brand, which may include social media content and a personal website.

#### **ENTREP 325-0 Engineering Entrepreneurship (1 Unit)**

The goal of the course is to introduce students to innovation-driven entrepreneurship, a process by which emergent technology serves as the catalyst for new venture formation. In partnership with Northwestern's Innovation and New Ventures Office, this course challenges student teams to develop strategies for commercializing cutting-edge technologies. Each year, the course focuses on a significant innovation space. Taught with IEMS 325-0; may not receive credit for both courses. Prerequisite: ENTREP 330-1.

#### **ENTREP 330-1 Startup Accounting and Finance (1 Unit)**

This course meets a core requirement for the Farley undergraduate minor in entrepreneurship. This course teaches students foundational accounting principles and how to manage the finances of small and early-stage businesses. Students will work in teams on projects driven by case studies and will immediately be able to apply their learnings to their own startup projects.

#### **ENTREP 331-0 Entrepreneurial Sales and Marketing (1 Unit)**

This course meets a core requirement for the undergraduate minor in entrepreneurship. The goal of the course is to teach students about the tools and strategies that startups use to generate revenue. It covers a broad range of topics related to sales and marketing including branding, positioning, lead generation, direct selling, social media, content marketing, influencer marketing, SEO, paid search, email marketing and other current trends. The class is a mixture of lecture, breakout groups and guest speakers.

**ENTREP 332-0 Financing Entrepreneurial Ventures (1 Unit)** Topics selected from work of current interest in entrepreneurship and innovation. May be repeated for credit. Prerequisites: ENTREP 225-0 and ENTREP 325-0 recommended.

#### **ENTREP 340-0 Innovate for Impact (1 Unit)**

This experiential course is focused on venture creation in the social impact space. Collaborating closely with external partners, students will employ lean startup principles, harnessing insights from subject matter experts in entrepreneurship, science, technology, and engineering to innovate new products, services, or technologies that help solve some of our biggest challenges.

**ENTREP 360-0 Leadership, Ethics, and You (1 Unit)** This class satisfies a core requirement for the undergraduate minor in entrepreneurship. The class is designed for students who want to explore how ethics and integrity are tied to leadership, and how leadership skills can contribute

to future success in both entrepreneurial endeavors and traditional career paths.

**ENTREP 365-0 Tech Ethics and Business Integrity (1 Unit)** This course will explore the unique ethical challenges that face the technology industry, utilizing recent and historical case studies. Students will be challenged to think about what it means to run a business with integrity by examining common issues within the workplace as well as the responsibility that businesses have to customers. Data privacy abuses, sexual misconduct, and corporate greed, among many other topics, will be addressed.

**ENTREP 380-1 Bay Area Experiential Seminar (1 Unit)** In this course, students participating in Farley's Bay Area Quarter will prepare for the winter study-away experience by studying the history of Silicon Valley and its culture of innovation. Through books, podcasts, guest speakers and discussions, the class will provide context for the externships and site visits that will be part of the Bay Area Quarter experiential seminar. Students will work collaboratively on presentations, as well as create strategic plans that align with each individual's goals for the quarter in San Francisco.

**ENTREP 380-2 Bay Area Experiential Seminar (1 Unit)** In this experiential class, students will gain exposure to work culture in the Bay Area. This will include externships at companies, from startups to Big Tech, in which students will shadow and/or interview employees to gain an understanding of the organization. The on-site externship – once a week for 6-8 weeks – will be supplemented by readings, reflection papers and weekly, hour-long discussions with the professor and classmates. Students will also submit a final paper summarizing broad class learnings, as well as observations specific to their host companies. This course is taught at 44 Montgomery in San Francisco as a part of the Farley Bay Area Quarter program and is only available to students admitted to the Farley BAQ program.

**ENTREP 395-0 Special Topics (1 Unit)** Topics selected from work of current interest in entrepreneurship and innovation. May be repeated for credit.

**ENTREP 399-0 Independent Study with Farley Center for Entrepreneurship and Innovation (1-3 Units)** Special projects under faculty direction. May be repeated for credit. Prerequisite: consent of instructor and department.

## **Entrepreneurship Minor**

The Farley Center's undergraduate minor in entrepreneurship is open to students from all undergraduate schools at Northwestern. It is designed for students who are interested in pursuing a practical education in how to start a business or how to make innovation a cornerstone of their career paths.

The minor requires 8 courses, including 5 core courses and 3 electives. No more than 3 courses may be double counted between a student's major program and the minor. Students with a primary major outside of McCormick may also be subject to the double counting rules of their home schools. Courses with a grade lower than "C-" (C minus) cannot be applied to the minor. To declare the Entrepreneurship minor, students should submit the minor declaration form in **MAS (McCormick Advising System)** at least one year prior to their expected graduation date.

Please also note that many of our graduate level courses are open to undergraduate students. Refer to the Farley Center website (<https://www.farley.northwestern.edu/>) for a complete listing of all courses and the most up-to-date information on the minor program.

## Core courses:

- ENTREP 225-0 Principles of Entrepreneurship
- ENTREP 310-0 Personal Branding or ENTREP 331-0 Entrepreneurial Sales and Marketing
- ENTREP 330-1 Startup Accounting and Finance
- ENTREP 360-0 Leadership, Ethics, and You or ENTREP 365-0 Tech Ethics and Business Integrity (open to students admitted to the Farley Bay Area Quarter (<https://farley.northwestern.edu/academics-resources/farley-bay-area-quarter.html>) only)
- Any Farley Center experiential course: includes all NUvention courses, ENTREP 325-0 Engineering Entrepreneurship, ENTREP 340-0 Innovate for Impact, ENTREP 425-0 Consulting for Wearable Technology, and ENTREP 490-0 Product Management

## Electives:

- Any Farley Center course
- The following pre-approved coursework from other schools and programs on campus. Any outside coursework to be applied to the minor must be approved by the Farley Center in advance and must be in compliance with double-counting rules. Students may petition courses not on this list in MAS. Please write to [farley@northwestern.edu](mailto:farley@northwestern.edu) with questions.
  - BUS\_INST 301 Accounting
  - BUS\_INST 302 Marketing Management
  - BUS\_INST 303 Leadership In Organizations
  - BUS\_INST 321 Business and Economic Institutions in Historical Perspective
  - COMM\_ST 302 Law of The Creative Process
  - COMM\_ST 363 Bargaining and Negotiation
  - DSGN 305 Human-Centered Service Design
  - DSGN 308 Human-Centered Product Design
  - DSGN 350 Intellectual Property and Innovation
  - DSGN 382 Service Design Studio I & II
  - DSGN 384 Interdisciplinary Product Design Projects I & II
  - IMC 303 Integrated Marketing Communications Strategy
  - IMC 307 Digital, Social and Mobile Marketing
  - IMC 310 Integrated Marketing and Communication Law, Policy and Ethics
  - IMC 311 Data Governance: Critical Issues in Digital Marketing Communications
  - JOUR 319 Entrepreneurial Approaches to Media Innovation
  - LDRSHP 304 Leading from Design
  - LOC 312 Modern Organization and Innovations

## General Engineering

### Introductory and General Engineering Courses

#### Required Introductory Courses

**DSGN 106-1 Design Thinking and Communication (0.5 Unit)** Integrated introduction to the user-centered design process and technical communication. Students will address challenges proposed by project partners by identifying unmet needs, conducting research, generating and evaluating potential solutions, and finally, presenting a final design concept with supporting documentation. Students also enhance their

abilities in equitable teamwork, project management, fabrication skills, and producing written, oral, graphical, and interpersonal communication. One lecture, two section meetings, and lab. Co-registration with ENGLISH 106-1 required. Primarily intended for first-year engineering students. Prerequisite: Reserved for McCormick students only.

#### DSGN 106-2 Design Thinking and Communication (0.5 Unit)

Integrated iteration on the user-centered design process and technical communication. This course will build on the learning objectives from DTC-1 while adding more focus on ethics in design and communication, equitable distribution of teamwork, project management, documenting and communicating progress, and exploring a wider variety of project topics. One lecture, two section meetings, and lab. Co-registration with ENGLISH 106-2 required. Primarily intended for first-year engineering students. Prerequisite: DSGN 106-1.

**GEN\_ENG 205-1 Engineering Analysis I (1 Unit)** Introduction to linear algebra from computational, mathematical, and applications viewpoints. Computational methods using a higher-level software package such as MATLAB.

**GEN\_ENG 206-1 Honor Engineering Analysis (1 Unit)** Covers topics addressed in GEN\_ENG 205-1 at a deeper level. Intended for students with demonstrated strength in mathematics, computer programming, and/or physics. Prerequisite: consent of instructor.

**GEN\_ENG 205-2 Engineering Analysis II (1 Unit)** Linear algebra and introduction to vector methods in engineering analysis. Statics and dynamics of rigid bodies and matrix analysis of trusses and networks. Engineering design problems. Prerequisites: C- or better in GEN\_ENG 205-1; MATH 220-1.

**GEN\_ENG 205-3 Engineering Analysis III (1 Unit)** Dynamic behavior of the elements. Modeling of mechanical (both translational and rotational), electrical, thermal, hydraulic, and chemical systems composed of those elements. Prerequisite: C- or better in GEN\_ENG 205-2.

**GEN\_ENG 205-4 Engineering Analysis IV (1 Unit)** Solution methods for ordinary differential equations, including exact, numerical, and qualitative methods. Applications and modeling principles; solution techniques. Prerequisites: C- or better in GEN\_ENG 205-2; MATH 220-2.

**GEN\_ENG 206-4 Honors Engineering Analysis IV (1 Unit)** Covers topics addressed in GEN\_ENG 205-4 at a deeper level. Intended for students with demonstrated strength in mathematics, computer programming, and/or physics. Prerequisite: consent of instructor.

#### Optional General Engineering Courses

**GEN\_ENG 190-0 Engineering Freshman Seminar (0-1 Unit)** Broad engineering or interdisciplinary subjects of current interest.

**GEN\_ENG 205-MG-2 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in GEN\_ENG 205-2. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**GEN\_ENG 205-SG-1 Peer-Guided Study Group: Engineering Analysis I (0 Unit)** Peer-guided study group for students enrolled in GEN\_ENG 205-1. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**GEN\_ENG 205-SG-2 Peer-Guided Study Group: Engineering Analysis II (0 Unit)** Peer-guided study group for students enrolled in GEN\_ENG 205-2. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**GEN\_ENG 205-SG-3 Peer-Guided Study Group: Engineering Analysis III (0 Unit)** Peer-guided study group for students enrolled in GEN\_ENG 205-3.

Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**GEN\_ENG 205-SG-4 Peer-Guided Study Group: Engineering Analysis IV (0 Unit)** Peer-guided study group for students enrolled in GEN\_ENG 205-4.

Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**GEN\_ENG 220-1 Analy/Comp Graph (0.5 Unit)** Introduction to AutoCAD, geographic information systems (GIS), and electronic surveying and measuring.**GEN\_ENG 220-2 Analy/Comp Graph II (0.5 Unit)** Introduction to AutoCAD, geographic information systems (GIS), and electronic surveying and measuring.**GEN\_ENG 295-0 Special Topics in Engineering (1 Unit)** Intermediate-level topics suggested by students or faculty members and approved by the curriculum committee.**GEN\_ENG 355-0 Domestic Study Affiliated (0 Unit)** Fulltime registration in an academic program in the continental United States that is affiliated with Northwestern. Upon successful completion of the program, registration is replaced with credits transferred from the affiliated institution.**GEN\_ENG 395-0 Special Topics in Engineering (1 Unit)** Topics suggested by faculty and approved by the curriculum committee.**GEN\_ENG 397-0 Selected Topics in Engineering (0.5 Unit)** Topics of limited scope as suggested by faculty and approved by the curriculum committee.**GEN\_ENG 399-0 Independent Study (1 Unit)** Independent study on an engineering subject supervised by a faculty member and concluding with a final report.**Murphy Institute General Engineering Courses**

- Participation in the Murphy Institute and its courses is by invitation only. Additional information can be found on the Murphy Institute website: <https://www.mccormick.northwestern.edu/academics/undergraduate/programs/honors-and-combined-degrees/murphy-scholars/>

**GEN\_ENG 195-1 Engineering Dialog I (0.33-0.34 Unit)** Weekly seminar addressing subjects of interest in engineering, design, engineering policy, and entrepreneurial activities. For participants in the invitation-only Murphy Institute Scholars Program. May be repeated.**GEN\_ENG 196-1 Engineering Discourse I (0 Unit)** Noncredit counterpart to GEN\_ENG 195-1.**GEN\_ENG 195-2 Engineering Dialog II (0.33-0.34 Unit)** Weekly seminar addressing subjects of interest in engineering, design, engineering policy, and entrepreneurial activities. For participants in the invitation-only Murphy Institute Scholars Program. May be repeated.**GEN\_ENG 196-2 Engineering Discourse II (0 Unit)** Noncredit counterpart to GEN\_ENG 195-2.**GEN\_ENG 195-3 Engineering Dialog III (0.33-0.34 Unit)** Weekly seminar addressing subjects of interest in engineering, design, engineering policy, and entrepreneurial activities. For participants in the invitation-only Murphy Institute Scholars Program. May be repeated.**GEN\_ENG 196-3 Engineering Discourse III (0 Unit)** Noncredit counterpart to GEN\_ENG 195-3.**GEN\_ENG 195-4 Engineering Dialog IV (0.33-0.34 Unit)** Weekly seminar addressing subjects of interest in engineering, design, engineering policy, and entrepreneurial activities. For participants in the invitation-only Murphy Institute Scholars Program. May be repeated.**GEN\_ENG 196-4 Engineering Discourse IV (0 Unit)** Noncredit counterpart to GEN\_ENG 195-4.

## Engineering Career Development

The mission of Engineering Career Development (ECD) is to provide all McCormick students with the tools necessary for lifelong career management and to forge relationships with employer partners for this end.

Engineering Career Development offers students:

- Courses and workshops designed to aid students in preparing and conducting a job search
- Personalized, one-on-one career advising
- Employer events and on campus interviewing opportunities
- Work integrated learning programs that allow students to maintain their student status while enrolling in zero-credit, zero-tuition courses for co-op, internship, research, and service learning experiences.

For more information visit: [www.mccormick.northwestern.edu/career-development/](http://www.mccormick.northwestern.edu/career-development/) (<https://www.mccormick.northwestern.edu/career-development/>)

## Engineering Career Development Course Offerings

### Introductory Coursework

**CRDV 301-0 Introduction to Career Development (0 Unit)** Course preparing students for the Walter P. Murphy Cooperative Engineering Education Program, internships, and fulltime employment. It includes units on job-search skills, self-assessment, transition to the workplace, workplace-management issues, and transition back to school.

### Cooperative Engineering Courses

- All courses in the CRDV 310 sequence are 0 credit.
- Sequence of courses covering the work terms of students in the Walter P. Murphy Cooperative Engineering Education Program.

Course	Title
CRDV 310-1 or CRDV 310-1-GM	Cooperative Engineering Education International Cooperative Engineering Education
CRDV 310-2 or CRDV 310-2-GM	Cooperative Engineering Education International Cooperative Engineering Education
CRDV 310-3 or CRDV 310-3-GM	Cooperative Engineering Education International Cooperative Engineering Education
CRDV 310-4 or CRDV 310-4-GM	Cooperative Engineering Education International Cooperative Engineering Education
CRDV 310-5 or CRDV 310-5-GM	Cooperative Engineering Education International Cooperative Engineering Education
CRDV 310-6 or CRDV 310-6-GM	Cooperative Engineering Education International Cooperative Engineering Education
CRDV 310-7 or CRDV 310-7-GM	Cooperative Engineering Education: Half-time International Cooperative Engineering Education: Half-Time

## Engineering Internship Courses

- All courses in the CRDV 311 sequence are 0 credit.
- Series of courses designated for students seeking University recognition of their internship experience, or participating in an approved internship during the regular academic year.

Course	Title
CRDV 311-1 or CRDV 311-1-GM	Professional Engineering Internship International Engineering Internship
CRDV 311-2 or CRDV 311-2-GM	Professional Engineering Internship International Engineering Internship
CRDV 311-3 or CRDV 311-3-GM	Professional Engineering Internship International Engineering Internship
CRDV 311-7 or CRDV 311-7-GM	Engineering Internship: Half-time International Engineering Internship: Half-Time

## Engineering Projects in Service Learning Courses

- All courses in the CRDV 312 sequence are 0 credit.
- CRDV 312 courses require students to engage in an engineering-related, full-time community service project under the guidance of an appropriate faculty member, agency supervisor or mentor.

Course	Title
CRDV 312-1 or CRDV 312-1-GM	Undergraduate Engineering Projects in Service Learning International Engineering Service Learning
CRDV 312-2 or CRDV 312-2-GM	Undergraduate Engineering Projects in Service Learning International Engineering Service Learning
CRDV 312-3 or CRDV 312-3-GM	Undergraduate Engineering Projects in Service Learning International Engineering Service Learning
CRDV 312-7 or CRDV 312-7-GM	Engineering Projects in Service Learning: Half-time International Engineering Service Learning: Half-Time

## Undergraduate Engineering Research Courses

- All courses in the CRDV 313 sequence are 0 credit.
- The CRDV 313 course sequence allows students to maintain half-time enrollment at Northwestern while engaged full-time in an University-based research project under the supervision of a faculty research sponsor. Students are evaluated by ABET criteria, the same as those in the Walter P. Murphy Cooperative Engineering Education Program and the Professional Engineering Internship Program.

Course	Title
CRDV 313-1 or CRDV 313-1-GM	Undergraduate Engineering Research International Engineering Research Experience
CRDV 313-2 or CRDV 313-2-GM	Undergraduate Engineering Research International Engineering Research Experience
CRDV 313-3 or CRDV 313-3-GM	Undergraduate Engineering Research International Engineering Research Experience
CRDV 313-7 or CRDV 313-7-GM	Engineering Research Experience: Half-time International Engineering Research Experience: Half-Time

## Northwestern Personal Development StudioLab

The Northwestern Personal Development StudioLab is a space where students create and practice their personal and powerful life approach.

The StudioLab collaborates with partners across campus and beyond to develop and deliver courses, opportunities, resources, and experiences that promote the personal growth of students. The StudioLab strives to cultivate a student body who possess:

- The ability to be intentional with their attention.
- Accurate awareness of themselves, their peers, and the world around them.
- Healthy connections to the present moment, to themselves, and to those around them.

The StudioLab offers the *Curious Life Certificate* (CLC), a series of classes that develops these qualities as the foundation for a successful and curious life.

For more information visit [www.mccormick.northwestern.edu/personal-development-studiolab/](http://www.mccormick.northwestern.edu/personal-development-studiolab/) (<https://www.mccormick.northwestern.edu/personal-development-studiolab/>)

## Engineering Office of Personal Development Course Offerings

**PRDV 101-1 McCormick First-Year Experience (0 Unit)** A series of peer-led small group discussions for first-year engineering students, covering topics like higher education culture, time management, strategies for success in courses, and mindset. Attendance is required.

**PRDV 101-2 McCormick First-Year Experience (0 Unit)** A series of peer-led small group discussions for first-year engineering students covering topics such as academic strategies, choice of major, exploration of non-major options, and health and well-being. Attendance is required.

**PRDV 200-0 PATH (Personal Development Studio Lab) (0 Unit)** PATH explores opportunities to improve performance on many different levels. Students will begin with a values assessment and set short term goals, then explore the role of attention, mindset, learning science, time management and self-compassion in achieving personal, academic, and future professional success. PATH is a prerequisite for the Curious Life Certificate.

**PRDV 300-0 Designing Your Life (1 Unit)** Considers an approach to life as a series of design projects to help students craft a total life. Includes seminar-style discussions, role-playing, short writing assignments, hands-on making, guest speakers, and individual mentoring and coaching. Prerequisite: Reserved for Juniors and Seniors.

**PRDV 325-0 Emotional Intelligence 101 - Managing Yourself, Maximizing Your Potential (1 Unit)** Introduction to emotional intelligence theories and concepts; provides practical tools for building skills in stress management, intrapersonal and interpersonal awareness, peak performance, resilience/adaptability, and general mood.

**PRDV 335-1 Engineering Improv I: The Art of Allowing (0.5 Unit)** Start anywhere, remember you are not the most important person in the scene, and say yes. Through these and other improv techniques, students learn to tackle unexpected obstacles, building skills that can be leveraged in both academic and non-academic contexts to face challenges with resilience.

**PRDV 335-2 Engineering Improv II: The Art of Application (0.5 Unit)** This course builds on Improv I and takes students deeper into concepts and applications. Prerequisite: PRDV 335-1 Engineering Improv I.

**PRDV 345-0 Whole-Body Thinking: Collaborative Problem Solving through Partner Dancing (1 Unit)** In this approach to swing dancing, the goal is for two people to join hands and use the rhythms they hear in

swinging, jazz-rhythm-based music as a means of connecting with each other.

**PRDV 395-0 Special Topics in Personal Development (1 Unit)** Topics suggested by students or faculty and approved by the curriculum committee. Prerequisite: consent of instructor.

**PRDV 396-0 Topics in Personal Development (0 Unit)** Topics of limited scope as suggested by faculty or students and approved by the McCormick Office of Personal Development.

**PRDV 397-0 Selected Topics in Personal Development (0.5 Unit)** Topics of limited scope as suggested by faculty or students and approved by the McCormick Curriculum Committee.

## Northwestern Institute on Complex Systems

The Northwestern Institute on Complex Systems (NICO) was founded in 2004 with the goals of uncovering fundamental principles governing complex systems in science, technology, and human behavior and applying these principles to solve societally relevant problems through the analysis, design, and control of complex systems. Today, NICO serves as a hub and facilitator for pathbreaking research in complexity and data science transcending the boundaries of established disciplines. NICO is a collaboration between the McCormick School of Engineering and the Kellogg School of Management.

### Northwestern Institute on Complex Systems Course Offerings

#### NICO 101-0 Introduction to Programming for Big Data (0.67 Unit)

The skills needed to go from data to knowledge and application, which go under the name of Data Science, are in big demand in industry, government, and academia. This course provides an introduction to the foundational skills needed by data scientists. Prior knowledge of programming is not needed.

#### NICO 102-0 Project for Introduction to Programming for Big Data (0.33 Unit)

The skills needed to go from data to knowledge and application, which go under the name of Data Science, are in big demand in industry, government, and academia. This course provides an opportunity to develop programming skills by working on a data centered project. *Formal Studies Distro Area*

## Human Computer Interaction

[hci.northwestern.edu](http://hci.northwestern.edu) (<https://hci.northwestern.edu>)

"Human-computer interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers. While initially concerned with computers, HCI has since expanded to cover almost all forms of information technology design." -Interaction Design Foundation (<https://www.interaction-design.org/literature/topics/human-computer-interaction/>)

The HCI Certificate allows Northwestern students from all departments to develop their interest and exposure to ideas and research in HCI, including the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.

## Programs of Study

- Human Computer Interaction Certificate (p. 190)

## Human Computer Interaction Courses

Courses for this interdisciplinary program are drawn from across the university. The program requires at least 6 courses: including 1 course from a list of foundational courses in HCI, 3 courses from one of the technical domain options, and at least 2 courses from a list of Social Science and Design topics intended to give students interdisciplinary experience across the fields of HCI. For a list of courses, see the HCI program (p. 190).

## Human Computer Interaction Certificate

This certificate provides undergraduates with a basic familiarity in HCI.

The program requires at least 6 courses, including 1 course from a list of foundational courses in HCI, 3 courses from one of the technical domain options, and at least 2 courses from a list of Social Science and Design topics intended to give students interdisciplinary experience across the fields of HCI. Certificate coursework must include at least 4 units that are NOT counted toward a student's major, minor, or other certificate requirements. However, certificate coursework may count toward distribution, theme, or elective requirements.

### Foundations of HCI Requirement (1 course)

Course	Title
COMM_ST 227-0	Communication & Technology
COMM_ST 351-0 or COMP_SCI 314-0	Technology & Human Interaction Technology and Human Interaction
COMP_SCI 311-0	Inclusive Making
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
LRN_SCI 313-0 or LRN_SCI 413-0	Tangible Interaction Design and Learning Tangible Interaction Design and Learning
LRN_SCI 351-0 or LRN_SCI 451-0	Topics in Learning Sciences (Inclusive Making) Topics in Learning Sciences

### Technical Domain Requirement (3 courses)

Students MUST complete the 3 courses in ONE of the technical domain options below:

Course	Title
<b>Interfaces (CS) (suggested for Computer Science majors)</b>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 214-0	Data Structures & Algorithms

Course	Title
<b>Interfaces (suggested for SESP, SoC, and WCAS students)</b>	
COMP_SCI 110-0	Introduction to Computer Programming (or COMP_SCI 111-0 Fundamentals of Computer Programming 1)
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5

COMP_SCI 130-0	Tools and Technology of the World-Wide Web (or COMP_SCI 396-0 Intro to Web Development)	<b>Course</b>	<b>Title</b>
<b>Social Science Electives</b>			
MECH_ENG 224-0	Scientific and Embedded Programming in Python	COMM_ST 227-0	Communication & Technology
MECH_ENG 333-0	Introduction to Mechatronics	COMM_ST 351-0	Technology & Human Interaction
And 1 additional course from the Technical Electives table below		COMM_ST 352-0 or IEMS 341-0	Social Network Analysis Social Networks Analysis
COMP_SCI 110-0	Introduction to Computer Programming (or COMP_SCI 111-0 Fundamentals of Computer Programming 1)	COMM_ST 358-0	Algorithms and Society
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5	COMM_ST 378-0	Online Communities and Crowds
And 1 additional course from the Technical Electives table below		COMP_SCI 314-0	Technology and Human Interaction
<b>Design Electives</b>			
COMP_SCI 110-0	Introduction to Computer Programming (or COMP_SCI 111-0 Fundamentals of Computer Programming 1)	PSYCH 345-0	Presenting Ideas & Data
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5	<b>Course</b>	<b>Title</b>
And 1 additional course from the Technical Electives table below		COMM_ST 395-0	Topics in Communication Studies (Knight Lab Studio)
COMP_SCI 110-0	Introduction to Computer Programming (or COMP_SCI 111-0 Fundamentals of Computer Programming 1)	COMP_SCI 396-0	Special Topics in Computer Science (Computing and Socioeconomic Mobility) or (Computing, Ethics, and Society)
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5	DSGN 305-0	Human-Centered Service Design
JOUR 342-1	Knight Lab: Studio (or JOUR 376-0 Media Design or JOUR 377-0 Data Analysis and Visualization)	DSGN 306-0	User Experience Design
COMP_SCI 110-0	Introduction to Computer Programming	DSGN 308-0	Human-Centered Product Design
COMP_SCI 111-0	Fundamentals of Computer Programming	DSGN 395-0	Special Topics (Bay Area Service Design)
COMP_SCI 130-0	Tools and Technology of the World-Wide Web	LRN_SCI 351-0	Topics in Learning Sciences (Computing and Socioeconomic Mobility)
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5	LRN_SCI 429-0	Design of Learning Environments
COMP_SCI 330-0	Human Computer Interaction	LRN_SCI 451-0	Topics in Learning Sciences (Computing and Socioeconomic Mobility)
COMP_SCI 333-0	Interactive Information Visualization	RTVF 376-0	Topics in Interactive Media (Digital Musical Instrument Design)
COMP_SCI 347-0	Conversational AI	or COMP_SCI 497-0	Special Projects in Computer Science
COMP_SCI 349-0	Machine Learning		
COMP_SCI 352-0	Machine Perception of Music & Audio		
COMP_SCI 376-0	Computer Game Design and Development		
COMP_SCI 377-0	Game Design Studio		
JOUR 376-0	Media Design		
JOUR 377-0	Introduction to Data Journalism		
LRN_SCI 351-0	Topics in Learning Sciences (Multimodal Learning Analytics)		
or LRN_SCI 451-0	Topics in Learning Sciences		
MECH_ENG 224-0	Scientific and Embedded Programming in Python		
MECH_ENG 233-0	Electronics Design		
MECH_ENG 314-0	Machine Dynamics		
MECH_ENG 333-0	Introduction to Mechatronics		
MECH_ENG 341-0	Computational Methods for Engineering Design		

## Social Sciences & Design Breadth Requirements (2 courses)

Students must complete at least 1 course listed in Social Science Electives Table AND at least 1 course listed in the Design Electives Table below:

## Industrial Engineering and Management Sciences

[mccormick.northwestern.edu/industrial](http://mccormick.northwestern.edu/industrial)

Northwestern's industrial engineering students graduate with the skills needed to create, design, analyze, and improve the operation of complex organizational systems, e.g., financial systems, information systems, production systems, logistics, and transportation. All students acquire an understanding of statistics, economics, optimization, computing, and simulation techniques. Elective opportunities include advanced courses in analytics, data science, financial engineering, management science, service operations, and production and supply-chain management. Realistic (i.e., open-ended and ill-defined) problems are used to help students refine the application of these principles as well as their ability to work in teams and to communicate their results effectively. These are the experiences that employers find most valuable in our graduates regardless of the field they enter.

Students may pursue an optional concentration using technical electives and other courses from one or more of the following areas: graduate preparation; data science and engineering; human-centered engineering; operations, transportation & logistics; and product management.

In preparation for future careers, students take full advantage of the additional academic, business, and leadership programs available at Northwestern: a minor in machine learning and data science, computer science or economics; the Kellogg Certificate Program for Undergraduates; study abroad; and the co-op program. The IE Client Project Challenge experience allows students to integrate these

experiences with their IE course work to address a current application for a real client.

## **Program of Study**

- Industrial Engineering Degree (p. 194)

**IEMS 201-0 Introduction to Statistics (1 Unit)** Collecting data; summarizing and displaying data; drawing conclusions from data; probability background, confidence intervals, hypotheses tests, regression, correlation. Not open to industrial engineering degree candidates. May not receive credit for both IEMS 201-0 and any of BMD\_ENG 220-0, IEMS 303-0, or CHEM\_ENG 312-0. Prerequisite: MATH 218-2 or MATH 220-2 or equivalent.

**IEMS 225-0 Principles of Entrepreneurship (1 Unit)** Introduction to essential elements of building one's own business, from brainstorming ideas and assessing opportunities to pitching a business idea. History of entrepreneurship and the entrepreneurial psyche. Business plan fundamentals, including strategy, finance, accounting, marketing, operations, and choosing the ideal management team. Taught with ENTREP 225-0; may not receive credit for both courses. May not be taken after IEMS 325-0 or ENTREP 325-0.

**IEMS 295-0 Introductory Special Topics in IEMS (0-1 Unit)** Introductory topics suggested by faculty and approved by the department. Credit dependent on topic and length of course.

**IEMS 302-0 Probability (1 Unit)** Introduction to probability theory and its applications. Conditional probabilities and expectation values. Random variables and distributions, including binomial, Poisson, exponential, and normal. Joint distributions and limit laws for foundation of and connection to statistics. Examples in reliability, inventory, finance, and statistics. May not receive credit for both IEMS 202-0 and any of the following: ELEC\_ENG 302-0; MATH 310-1, MATH 314-0, MATH 385-0; STAT 320-1, STAT 383-0. Prerequisite: prior completion of or concurrent enrollment in MATH 228-2.

### **IEMS 303-0 Statistics (1 Unit)**

Introduction to the foundations of statistics and statistical computing for data analysis and their applications. Descriptive statistics and statistical inference for estimation, testing, and prediction. May not receive credit for both IEMS 303-0 and any of IEMS 201-0, BMD\_ENG 220-0, or CHEM\_ENG 312-0. May not be taken for credit with or after STAT 320-1. Prerequisites: IEMS 302-0 or equivalent; COMP\_SCI 150-0 or equivalent.

### **IEMS 304-0 Statistical Learning for Data Analysis (1 Unit)**

Predictive modeling of data using modern regression and classification methods. Multiple linear regression; logistic regression; pitfalls and diagnostics; nonparametric and nonlinear regression and classification such as trees, nearest neighbors, neural networks, and ensemble methods.

Prerequisites: IEMS 303-0 and COMP\_SCI 150-0 or equivalents.

### **IEMS 307-0 Quality Improvement by Experimental Design (1 Unit)**

Methods for designing and analyzing industrial experiments. Blocking; randomization; multiple regression; factorial and fractional factorial experiments; response surface methodology; Taguchi's robust design; split plot experimentation. Homework, labs, and project.

Prerequisite: IEMS 201-0, IEMS 303-0, or equivalent.

### **IEMS 308-0 Data Science and Analytics (1 Unit)**

Focuses on select problems in data science, in particular clustering, association rules, web analytics, text mining, and dimensionality reduction. Lectures will be completed with exercises and projects in open source framework R. Prior knowledge of classification techniques and R is required.

Prerequisites: IEMS 304-0; COMP\_SCI 217-0.

### **IEMS 310-0 Operations Research (1 Unit)**

Survey of operations research techniques. Linear programming, decision theory, stochastic processes, game theory. May not be taken for credit with or after IEMS 313-0.

Prerequisites: IEMS 201-0 or IEMS 302-0; GEN\_ENG 205-1 or GEN\_ENG 206-1 or MATH 240-0.

### **IEMS 313-0 Foundations of Optimization (1 Unit)**

Formulation and solution of applicable optimization models, including linear, integer, nonlinear, and network problems. Efficient algorithmic methods and use of computer modeling languages and systems.

Homework, exams, and project.

Prerequisites: GEN\_ENG 205-1 or GEN\_ENG 206-1; MATH 228-1; COMP\_SCI 110-0 or COMP\_SCI 111-0 or COMP\_SCI 150-0; sophomore standing.

### **IEMS 315-0 Stochastic Models (1 Unit)**

Fundamental concepts of probability theory; modeling and analysis of systems having random dynamics, particularly queueing systems.

Prerequisites: IEMS 302-0; COMP\_SCI 150-0; GEN\_ENG 205-1 or GEN\_ENG 206-1; and prior completion of or concurrent enrollment in IEMS 303-0.

### **IEMS 317-0 Discrete Event Systems Simulation (1 Unit)**

Computer simulation of discrete-change systems subject to uncertainty. Choice of input distributions; development of models; design and analysis of simulation experiments. Mini-projects, exams, and computer labs.

Prerequisites: IEMS 303-0; IEMS 310-0 or IEMS 315-0.

### **IEMS 325-0 Engineering Entrepreneurship (1 Unit)**

Overview of the entrepreneurial process from an engineering perspective. Idea generation, planning, financing, marketing, protecting, staffing, leading, growing, and harvesting. Business models for startups. Lectures, guest speakers, and case studies. Taught with IEMS 325-0; may not receive credit for both courses.

Prerequisite: 1 course in accounting or finance such as CIV\_ENV 205-0 or ENTREP 330-1.

**IEMS 340-0 Qualitative Methods in Engineering Systems (1 Unit)** Use of field research methods to solve management problems. Students define projects, design field studies and pilot tests of data collection instruments, and present results. Prerequisites: DSGN 106-1 and DSGN 106-2, or consent of instructor for non-McCormick students.

### **IEMS 341-0 Social Networks Analysis (1 Unit)**

The use of social network analysis to understand the growing connectivity and complexity in the world around us on different scales, ranging from small groups to the World Wide Web. How we create social, economic, and technological networks, and how they enable and constrain attitudes and behaviors.

**IEMS 341-SA Social Networks Analysis (1 Unit)** The use of social network analysis to understand the growing connectivity and complexity in the world around us on different scales, ranging from small groups to the World Wide Web. How we create social, economic, and technological networks, and how they enable and constrain attitudes and behaviors.

### **IEMS 342-0 Organizational Behavior (1 Unit)**

Manager's view of tools available to recruit, develop, appraise, compensate, organize, and lead a team going through change.

Application of psychological principles relating to human dynamics, motivation, teams, power, and organizational culture. Lectures, guest speakers, and exams. Work experience recommended.

### **IEMS 343-0 Project Management for Engineers (1 Unit)**

A case study-based exploration of the body of project management knowledge. Key topics include project scheduling, risk management, project leadership, small-group dynamics, project methodologies, lifecycle concepts, and project controls. A Socratic approach is taken to exploring various case studies in the context of established and leading-edge project management concepts.

Prerequisites: CIV\_ENV 205-0 and IEMS 303-0.

#### **IEMS 344-0 Whole-Brain Leadership (1 Unit)**

This course examines whole-brain thinking and leading. Students will draw upon previous work and leadership experience to identify their own thinking and leading preferences and those of team member, and will examine contrasting thinking and leading styles in an effort to appreciate and combine these to produce optimal outcomes. A number of leadership theories and ways of leading will be examined including creative and agile leadership. Analytical thinkers/leaders will be challenged to spend more time with innovation and creativity, while creative thinkers/leaders will be presented with opportunities to engage in analytical problem-solving. Work experience recommended.

Prerequisite: Junior standing.

#### **IEMS 345-0 Negotiations and Conflict Resolution for Engineers (1 Unit)**

In this highly interactive class, students participate in negotiation and dispute resolution simulations that range in complexity from single-party/single-issue to multiparty/ multi-issue cases. In addition students explore the role of agents and third parties in the managing conflict. Throughout all of the simulations integrative and distributive strategies are emphasized that can be applied across a variety of contexts. Prerequisite: Junior standing.

**IEMS 349-0 Organizational Leadership (1 Unit)** This course enables students to think critically about leadership in organizations by understanding five facets of leadership. The five facets are areas of theorizing that explain what makes leadership effective: features, functions, form, fit, and focus. We will learn to answer questions about who is influential, what makes for good leadership, when (under what conditions?), and why (through what mechanisms?) is leadership successful. We explore leadership concepts using a set of illustrative case studies of interesting people who have led interesting lives of impact. Students may not receive credit for both IEMS 349-0 and COMM\_ST 350-SA.

**IEMS 349-SA Organizational Leadership (1 Unit)** This course enables students to think critically about leadership in organizations by understanding five facets of leadership. The five facets are areas of theorizing that explain what makes leadership effective: features, functions, form, fit, and focus. We will learn to answer questions about who is influential, what makes for good leadership, when (under what conditions?), and why (through what mechanisms?) is leadership successful. We explore leadership concepts using a set of illustrative case studies of interesting people who have led interesting lives of impact. Students may not receive credit for both IEMS 349-0 and COMM\_ST 350-SA.

#### **IEMS 351-0 Optimization Methods in Data Science (1 Unit)**

Introduction to nonlinear mathematical optimization with applications in data science. The theoretical foundation and the fundamental algorithms for nonlinear optimization are studied and applied to supervised learning models, including nonlinear regression, logistic regression, and deep neural networks. Students write their own implementation of the algorithms in the Python programming language and explore their performance on realistic data sets.

Prerequisites: COMP\_SCI 111-0 and IEMS 303-0 and IEMS 313-0, or equivalent.

**IEMS 365-0 Analytics for Social Good (1 Unit)** Challenges and opportunities in using analytics to pursue social good. Application of data-analysis and decision-making tools and frameworks to such case studies as disaster response and community-based healthcare. For juniors and seniors with interests in humanitarian and nonprofit operations. *Social Behavioral Sciences Distro Area*

#### **IEMS 373-0 Intro to Financial Engineering (1 Unit)**

Financial markets, derivative securities, risk management, mathematical models in finance. Foreign exchange, debt, equity, commodity markets. Investing, trading, hedging, arbitrage. Forwards, futures, options, swaps, exotic derivatives. Models of price dynamics, binomial model, introduction to Black-Scholes theory and Monte Carlo simulation. Homework, projects, and guest speakers.

Prerequisites: CIV\_ENV 205-0, IEMS 302-0, IEMS 303-0 or equivalents, or consent of instructor.

#### **IEMS 381-0 Supply Chain Modeling and Analysis (1 Unit)**

Application and development of mathematical modeling tools for the analysis of strategic, tactical, and operational supply-chain problems, including facility location, customer assignment, vehicle routing, and inventory management. Related topics including the role of information and decision support systems in supply chains. Homework, exams, and project.

Prerequisite: IEMS 313-0.

#### **IEMS 382-0 Operations Engineering and Management (1 Unit)**

Applications of operations research methods in managing and control of operations processes in manufacturing and service systems: including operations strategy; process-flow analysis; forecasting; capacity management; variability analysis; flow time and inventory management; flexible operations; lean operations; and production and workforce scheduling in manufacturing and service systems. Case studies, homework, and exams.

Prerequisites: IEMS 302-0; IEMS 310-0 or IEMS 313-0.

#### **IEMS 383-0 Service Engineering and Management (1 Unit)**

Exploration of service industries: cost-reduction and service-enhancement models, location planning, workforce scheduling, yield management, queuing analysis, and call-center management.

Prerequisites: IEMS 313-0, IEMS 315-0.

#### **IEMS 385-0 Introduction to Health Systems Management (1 Unit)**

Health systems, lean concepts, patient-flow analysis, inference, and data-driven knowledge generation, decisions, and change. Forecasting, operations, and optimization of health resources.

Prerequisites: IEMS 303-0, IEMS 313-0.

#### **IEMS 394-0 Industrial Engineering Client Project Challenge (1 Unit)**

Open-ended client projects involving application of operations research techniques to complex data analysis and decision problems. Typically taken at the end of junior year or at the start of senior year. Closed to seniors in spring quarter. Prerequisites: IEMS 302-0, IEMS 303-0, IEMS 304-0, IEMS 313-0, IEMS 315-0, and IEMS 317-0.

#### **IEMS 395-0 Special Topics in Industrial Engineering (1 Unit)**

Topics suggested by students or faculty members and approved by the department.

#### **IEMS 399-0 Independent Study in Industrial Engineering (1 Unit)**

Independent study on an industrial engineering topic supervised by a faculty member.

# Industrial Engineering Degree

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Requirements (48 units)

### Core Courses (27 units)<sup>1</sup>

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science chosen according to McCormick basic science guidelines (p. 144)</b>	
<b>4 engineering analysis and computer proficiency courses</b>	
GEN_ENG 205-1 & GEN_ENG 205-2 & GEN_ENG 205-3 or GEN_ENG 206-1 & GEN_ENG 206-2 & GEN_ENG 206-3	Engineering Analysis I and Engineering Analysis II and Engineering Analysis III Honor Engineering Analysis and Honors Engineering Analysis and Honors Engineering Analysis
ES_APPM 245-0	Elementary Applied Linear Algebra
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

### Major Program (21 units)

Course	Title
<b>1 engineering economics course</b>	
CIV_ENV 205-0	Economics and Finance for Engineers <sup>2</sup>
<b>3 computer programming courses</b>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 217-0	Data Management & Information Processing
<b>6 industrial engineering methods core courses</b>	
IEMS 302-0	Probability
IEMS 303-0	Statistics
IEMS 304-0	Statistical Learning for Data Analysis
IEMS 313-0	Foundations of Optimization
IEMS 315-0	Stochastic Models
IEMS 317-0	Discrete Event Systems Simulation
<b>1 production and logistics course chosen from the options below</b>	
IEMS 381-0	Supply Chain Modeling and Analysis
IEMS 382-0	Operations Engineering and Management
IEMS 383-0	Service Engineering and Management
IEMS 385-0	Introduction to Health Systems Management
<b>1 client project course</b>	
IEMS 394-0	Industrial Engineering Client Project Challenge
<b>5 IEMS elective courses</b>	
3 industrial engineering/operations research electives (p. 194)	
2 management science electives (p. 194)	
<b>4 general technical elective courses chosen from areas below</b>	
Any IEMS course not applied towards another degree requirement	
Any 200-level or higher course in McCormick, excluding CRDV and PRDV courses	
Any 200-level or higher course in Biology, Chemistry or Physics, except for exclusions listed below	
Any 300-level or higher course in Math or MMSS, except for exclusions listed below	
Other Approved Non-engineering Technical Electives (p. 194)	

The following courses may not be used as General Technical Electives:  
 CHEM 201-0, MATH 310-1, MATH 311-1, MATH 314-0, MATH 385-0, MATH 386-1,  
 PHYSICS 311-1, PHYSICS 311-2, PHYSICS 335-0

May include up to 2 units of IEMS 399-0

At most 2 General Technical Electives may be taken P/N; no other electives may be taken P/N.

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> May not be taken with or after KELLG\_FE 310-0 Principles of Finance; see adviser for alternatives.

- Students may earn one or more of five optional three-course concentrations:
  - Available concentrations and requirements may be obtained from the department.
  - Each concentration must include two courses not used towards any other IEMS concentration, and must include one course outside IEMS.
  - Courses used to fulfill major requirements may be used towards concentrations.
  - Students may not earn a concentration if receiving a major, minor or certificate in an area with substantial overlap.

## Major Program Electives

### Industrial Engineering/Operations Research Electives

Course	Title
3 courses chosen from the following list. Course used towards Production & Logistics requirement may not be used here.	
IEMS 307-0	Quality Improvement by Experimental Design
IEMS 308-0	Data Science and Analytics
IEMS 351-0	Optimization Methods in Data Science
IEMS 365-0	Analytics for Social Good
IEMS 373-0	Intro to Financial Engineering
IEMS 381-0	Supply Chain Modeling and Analysis
IEMS 382-0	Operations Engineering and Management
IEMS 383-0	Service Engineering and Management
IEMS 385-0	Introduction to Health Systems Management
IEMS 395-0	Special Topics in Industrial Engineering (pre-approved topics only)

### Management Science Electives

Course	Title
2 courses chosen from:	
IEMS 325-0	Engineering Entrepreneurship
IEMS 340-0	Qualitative Methods in Engineering Systems
IEMS 341-0	Social Networks Analysis
IEMS 342-0	Organizational Behavior
IEMS 343-0	Project Management for Engineers
IEMS 344-0	Whole-Brain Leadership
IEMS 345-0	Negotiations and Conflict Resolution for Engineers
IEMS 395-0	Special Topics in Industrial Engineering (pre-approved topics only)

### Other Approved Non-engineering Technical Electives

Course	Title
BUS_INST 301-0	Accounting
BUS_INST 302-0	Marketing Management
BUS_INST 303-0	Leadership in Organizations

ECON 309-0	Public Finance
ECON 331-0	Economics of Risk and Uncertainty
ECON 336-0	Analytic Methods for Public Policy Analysis
ECON 339-0	Labor Economics
ECON 349-0	Industrial Economics
ECON 350-0	Monopoly Competition & Public Policy
ECON 355-0	Transportation Economics and Public Policy
ECON 360-2	Investments
ECON 362-0	International Finance
ECON 371-0	Economics of Energy
ECON 380-1	Game Theory
ECON 380-2	Game Theory
ECON 381-1	Econometrics
ECON 381-2	Econometrics
IMC 303-0	Integrated Marketing Communications Strategy
ISEN 220-0	Introduction to Energy Systems for the 21st Century
ISEN 230-0	Climate Change and Sustainability: Ethical Dimensions
LOC 306-0	Studies in Organizational Change
LOC 311-0	Tools for Organizational Analysis
STAT 302-0	Data Visualization
STAT 320-3	Statistical Theory & Methods 3
STAT 325-0	Survey Sampling
STAT 328-0	Causal Inference
STAT 330-1	Applied Statistics for Research 1
STAT 332-0	Statistics for Life Sciences
STAT 344-0	Statistical Computing
STAT 348-0	Applied Multivariate Analysis
STAT 352-0	Nonparametric Statistical Methods
STAT 353-0	Advanced Regression
STAT 354-0	Time Series Modeling
STAT 355-0	Analysis of Qualitative Data
STAT 356-0	Hierarchical Linear Models
STAT 357-0	Introduction to Bayesian Statistics
STAT 365-0	Introduction to the Analysis of Financial Data
STAT 370-0	Human Rights Statistics

## Machine Learning and Data Science

[mccormick.northwestern.edu/machine-learning-data-science-minor/](http://mccormick.northwestern.edu/machine-learning-data-science-minor/)  
[\(https://www.mccormick.northwestern.edu/machine-learning-data-science-minor/\)](https://www.mccormick.northwestern.edu/machine-learning-data-science-minor/)

The McCormick minor in Machine Learning and Data Science provides students with practical knowledge fundamental to the data science lifecycle. Students will gain experience with a variety of data models and techniques used for collecting data, cleaning it, and analyzing it. They will also learn how to glean insights from data through multiple modern computational tools, as well as the ability to think critically about the construction and implications of analysis and models for data-driven decision making.

MLDS minor students will choose a specialization in Machine Learning or Data Engineering, or a Hybrid. Students specializing in Machine Learning will dive into the computational and mathematical roots of the algorithms, building deep understanding that will enable them to reason about successes and failures of Machine Learning systems. Students with Data Engineering and Hybrid specializations will engage with hands-on training with the tools needed to work effectively with large data sets

in the cloud or on their own machines. Their studies will culminate with a Data Engineering Studio course, where they will synthesize their in-depth knowledge of statistics, machine learning, and computing with a quarter-long project using real-world data. This project will enable them to apply their skills in a sustainable, reproducible manner.

The program also includes two elective courses to either enrich each student's major study or broaden their experience in data-intensive analysis in other disciplines. The minor is designed to empower students to leverage data science tools to amplify work in their own disciplines. This involves developing comprehensive data science pipelines and using computational data analysis for the estimation, prediction, design, and control of engineering systems.

## Programs of Study

- Machine Learning and Data Science Minor (p. 196)

## Data Science and Engineering Courses

**DATA\_ENG 200-0 Foundations of Data Science (1 Unit)** This course will cover the fundamentals of data science and the context within which this field operates. Students will learn how to design their data analysis by learning to think critically about what questions are answerable with data and they will learn about common pitfalls in data analytics such as algorithmic bias and best practices for handling the sensitive data of others. It will also introduce students to computational thinking, a methodology for problem-solving the technological challenges they will encounter as data scientists. This course will also introduce the steps of the data science lifecycle and common tools and techniques for data science. We will cover data exploration, the principles of data cleaning and integration, version control, and building reproducible data science pipelines. This course is reserved for students pursuing the McCormick Data Science and Engineering Minor. We encourage students to take this early in their studies for the minor. It is the first part of a two-part sequence with DATA\_ENG 300-0. Prerequisite: COMP\_SCI 150-0.

**DATA\_ENG 300-0 Data Engineering Studio (1 Unit)** Data Engineering Studio will teach students how to build a sustainable data science lifecycle. Students will analyze data in multiple contexts (e.g., SQL, building machine learning models), share their findings with peers, and practice iteratively refining their analysis based on feedback from the instructor, course staff, and peers. Students will also hone their practical skills and they will become acquainted with the common pitfalls in applying data analytics to real-world datasets. Moreover, students will learn how to analyze and visualize data from multiple data models, including graph analytics, time series data, and relational data. This course is reserved for students pursuing the McCormick Data Science and Engineering Minor. We encourage students to take this course at the end of their studies in the minor. It is the second part of a two-part sequence with DATA\_ENG 200-0. DATA\_ENG 300-0 has a "flipped classroom" format. Students are responsible for watching a lecture before each class. Then they will work collaboratively with their teams, the instructor, and course staff to learn how to solve various challenges in the data science pipeline. Prerequisite: DATA\_ENG 200-0 and 1 unit from each of the following core areas: Statistics Foundations, Intermediate Programming/Algorithmic Skills, and Applied Machine Learning.

# Machine Learning and Data Science Minor

The minor in Machine Learning and Data Science requires 8 courses: 2 core courses, 2 elective courses, and 4 courses from a specialization track. No more than 4 courses may be double counted within a student's 21-unit major program. Courses with a grade lower than "C-" cannot be applied to the minor.

## Core courses (2 units):

Course	Title
<b>Programming Foundations</b>	
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5

Course	Title
<b>Statistics Foundations (choose one)</b>	
BMD_ENG 220-0	Introduction to Biomedical Statistics
CHEM_ENG 312-0	Probability and Statistics for Chemical Engineering
CIV_ENV 306-0	Uncertainty Analysis
IEMS 201-0	Introduction to Statistics
IEMS 303-0	Statistics

## Specialization (4 units):

Course	Title
<b>Data Engineering Track</b>	
COMP_SCI 217-0 or COMP_SCI 214-0	Data Management & Information Processing Data Structures & Algorithms
IEMS 304-0	Statistical Learning for Data Analysis
DATA_ENG 200-0	Foundations of Data Science
DATA_ENG 300-0	Data Engineering Studio

Course	Title
<b>Machine Learning Track (not open to computer science majors/minors)</b>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning

Course	Title
<b>Hybrid Track</b>	
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 349-0	Machine Learning
DATA_ENG 200-0	Foundations of Data Science
DATA_ENG 300-0	Data Engineering Studio

## Elective Courses (2 units):

Course	Title
BMD_ENG 311-0	Computational Genomics
BMD_ENG 312-0	Biomedical Applications in Machine Learning
BMD_ENG 313-0	Wearable Devices: From Sensing to Biomedical Inference
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems
CIV_ENV 304-0	Civil and Environmental Engineering Systems Analysis
CIV_ENV 377-0	Choice Modelling in Engineering

CIV_ENV 395-0	Special Topics in Civil and Environmental Engrg (Data Science for Urban Systems)
CIV_ENV 480-1	Travel Demand Analysis & Forecasting 1
CIV_ENV 480-2	Advances in Travel Demand Analysis and Forecasting
CIV_ENV 495-0	Selected Topics in Civil Engineering (Data Analytics for Transportation and Urban Infrastructure Applications)
COMP_SCI 312-0	Data Privacy
COMP_SCI 332-0	Online Markets
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 394-0	Agile Software Development
COMP_SCI 396-0	Special Topics in Computer Science (Computing, Ethics, and Society) or (Visualization for Scientific Communication) or (Modeling Relationships with Causal Inference) or (Natural and Artificial Vision)
COMP_SCI 397-0	Special Projects in Computer Science (Rapid Prototyping for Software Innovation) or (Seminar in Statistical Language Modeling)
COMP_SCI 449-0	Deep Learning
ELEC_ENG 328-0	Information Theory & Learning
ELEC_ENG 335-0	Deep Learning Foundations from Scratch
ELEC_ENG 373-0	Deep Reinforcement Learning
ELEC_ENG 395-0	Special Topics in Electrical Engineering (Optimization Techniques for Machine Learning and Deep Learning)
ELEC_ENG 424-0	Distributed Optimization
ELEC_ENG 433-0	Statistical Pattern Recognition
ES_APPM 345-0	Applied Linear Algebra
ES_APPM 375-1	Quantitative Biology I: Experiments, Data, Models, and Analysis
ES_APPM 375-2	Quantitative Biology II: Experiments, Data, Models, and Analysis
ES_APPM 472-0	Introduction to the Analysis of RNA Sequencing Data
ES_APPM 479-0	Data Driven Methods for Dynamical Systems
IEMS 307-0	Quality Improvement by Experimental Design
IEMS 308-0	Data Science and Analytics
IEMS 313-0	Foundations of Optimization
IEMS 340-0	Qualitative Methods in Engineering Systems
IEMS 341-0	Social Networks Analysis
IEMS 351-0	Optimization Methods in Data Science
MAT_SCI 358-0	Modeling and Simulation in Materials Science and Engineering
MAT_SCI 391-0	Process Design
MECH_ENG 301-0	Introduction to Robotics Laboratory
MECH_ENG 329-0	Mechanistic Data Science for Engineering
MECH_ENG 341-0	Computational Methods for Engineering Design
MECH_ENG 441-0	Engineering Optimization for Product Design and Manufacturing
MECH_ENG 469-0	Machine Learning and Artificial Intelligence for Robotics
MECH_ENG 495-0	Selected Topics in Mechanical Engg (Sensory Navigation and Machine Learning for Robotics)

## Materials Science and Engineering

[mccormick.northwestern.edu/materials-science](http://mccormick.northwestern.edu/materials-science)

The discipline of materials science and engineering has expanded rapidly in response to growing demand for materials that make improved use of existing resources or are needed for new technologies. The program at Northwestern is broad based, offering educational and

research opportunities in polymer science, ceramics, metallurgy, surface science, biomaterials, nanomaterials, and electronic materials. Engineers, scientists, and technologists who work on these different materials all basically apply the same scientific principles governing the interrelation of processing, structure, properties, and material performance. A key theme of the Northwestern program is the integration of these principles in the systematic design of new materials.

The department offers an undergraduate program leading to the BS degree and participates in the co-op and BS/MS programs. The curriculum centers on engineering and materials coursework, but also provides the flexibility to focus on different areas of concentration as described below. The student's educational experience is broadened by courses in the humanities, arts, sciences, and other areas of engineering. The undergraduate program culminates in the senior project, in which the student carries out a research/development project with a faculty member and his or her research group.

Students who complete the BS program will be well prepared for professional work or graduate study in the application, production, processing, or research and development of materials. Graduates find opportunities in many areas, since materials expertise is important in various engineering fields as well as in medicine, physics, and chemistry.

## **Areas of Concentration**

The undergraduate program at Northwestern offers a close relationship between students and faculty. Every effort is made to tailor specific programs to needs and interests. Several broad areas of concentration are described below. Students are encouraged to create other areas that fit particular interests.

### **Biomaterials**

The growth of biotechnology has stimulated interest in the interface of the life sciences and materials science. The field of Biomaterials spans three broad areas: biomedical implant materials to replace natural structures; biomimetic materials applying biological concepts to the design of new engineering materials; and application of materials science principles to the understanding of structure and function in biological systems.

### **Design and Manufacturing**

This concentration is especially appropriate for those planning a career in industry, where engineers typically work in teams on projects requiring experience with design and manufacturing. It builds on the design content in the materials science curriculum and provides additional interdisciplinary design experience. The concentration also develops industrially relevant strengths in the areas of materials selection, computational tools, materials processing, and failure analysis.

### **Electronic Materials**

As microelectronics enters the era of ultra-large-scale integration, materials scientists face new challenges in developing materials and processes for integrated circuits with components of nanometer dimensions. New scientific principles, materials fabrication techniques, and improved instrumentation will be needed to exploit electronic-level structure/property relations in devices and their components. New electronic materials must be developed to meet requirements in a growing range of application areas, such as spintronics, optical computing, and fuel cells.

## **Energy Materials**

Materials play a key role in a variety of energy-related areas, including the search for new and efficient energy sources as well as energy storage and efficient energy utilization. Specific topics covered in this specialization include fuel cell materials, hydrogen generation and storage, solar energy conversion, lithium-ion battery materials, and lightweight energy-efficient structural materials.

## **Metals and Ceramics**

The ability to design increasingly higher-strength alloys allows for lighter structures, and higher-temperature materials provide energy efficiency. Heat-treatable and toughened ceramics exploit advanced knowledge of solid-state phase transformations and reactions. Exciting developments are taking place in high-performance composite combinations of these and other materials for structural and electronic applications.

## **Nanomaterials**

The area of nanomaterials, focusing on materials with sizes in the range of 1 to 100 nanometers, is an increasingly important research topic as nanotechnology industries develop. Examples of nanomaterials include ultrahigh-strength materials with nanometer-range structural features and structures designed and self-assembled atom by atom or molecule by molecule. Machines smaller than the tip of a pin can be built using either semiconductor materials processing or biologically inspired processing technology. This specialization is designed to give students the knowledge needed to work at the nanoscale, including design and synthesis, characterization, and theory/modeling/simulation of nanomaterials.

## **Polymeric Materials**

Synthetic polymers offer the engineering community an ever-expanding array of materials having properties tailored by chemical and physical processing. New developments are opening up applications for polymers as high-strength, low-weight materials; optoelectronic components; and key materials in other revolutionary areas. The basic understanding of engineering properties in terms of multilevel microstructure is essential for the full utilization of polymers.

## **Surface Science**

A solid communicates with the outside world through its surface. Wear, corrosion, and passivation are well-known surface processes. Chemical, electronic, and mechanical properties of materials depend on composition at surfaces and grain boundaries (internal surfaces), surface treatments, and the environment. The surface scientist must be able to not only determine the properties of surfaces and interfaces but also to control them.

## **Sustainable Materials**

Many technologies that the materials, manufacturing, energy, and water sectors currently rely on to provide benefits to humanity are not designed to last indefinitely. Redirection toward a more sustainable path is key. This concentration focuses on sustainability as it applies to materials and the manufacturing processes that convert them into a multitude of usable products. Students gain knowledge that bridges the domains of systems design and sustainable materials development and engineering.

## **Laboratories and Facilities**

Materials science and engineering demands sophisticated experimental techniques for the preparation and characterization of advanced materials. The undergraduate program makes heavy use of state-of-the-

art laboratory facilities in core courses, technical electives, and senior projects.

Materials preparation and processing equipment is available for all classes of materials, including an advanced crystal growth facility in a clean-room environment for preparing single crystals of metals, oxides, alkali halides, and semiconductors. Investigation of complex micro-structures employs a wide array of microscopy, diffraction, and microanalysis techniques. A unique combination of instruments (cold field-emission transmission electron microscope, atom-probe field-ion microscopes, scanning tunneling microscopes) provides atomic resolution imaging and chemical analysis. These are complemented by an extensive surface analytical laboratory. Characterization of material properties employs an advanced mechanical testing facility featuring static and dynamic loading under controlled temperature and environment. Specialized facilities measure electrical, spectroscopic, magnetic, and photonic properties. Computer laboratories and a design studio address thermodynamic modeling and simulation of microstructural evolution, with application in materials design.

## **Program of Study**

- Materials Science and Engineering Degree (p. 200)

**MAT\_SCI 190-0 MS & E Freshman Seminar (1 Unit)** Laboratory-oriented, with research projects emphasizing use of the scanning electron microscope and other modern apparatus; correlation of structure with other properties of materials. Lectures, laboratory.

**MAT\_SCI 195-0 Introductory Special Topics in Materials Science and Engineering (1 Unit)** Introductory topics suggested by students or faculty and approved by the department.

### **MAT\_SCI 201-0 Introduction to Materials Science and Engineering**

**Principles (1 Unit)** Basic concepts of Materials Science and Engineering: bonding, crystal structure, defects in solids, phase diagrams, and development of microstructures. Processing/structure/property/ performance relationships underlying the behavior of metals, ceramics, polymers, semiconductors, and composites. Mechanical, electrical, and chemical properties of engineering materials. Broadly, how materials' performance influences technological development, the economy, the environment, and society. Not to be taken for credit with or after MAT\_SCI 301-0. Prerequisite: CHEM 131-0, CHEM 151-0, CHEM 171-0, CHEM 1X1, CHEM 215, or CHEM 217.

### **MAT\_SCI 301-0 Introduction to Materials Science and Engineering**

**Principles (1 Unit)** Basic concepts of Materials Science and Engineering: bonding, crystal structure, defects in solids, phase diagrams, and development of microstructures. Processing/structure/property/ performance relationships underlying the behavior of metals, ceramics, polymers, semiconductors, and composites. Mechanical, electrical, and chemical properties of engineering materials. Broadly, how materials' performance influences technological development, the economy, the environment, and society. Prerequisites: CHEM 131-0, CHEM 151-0, CHEM 171-0, CHEM 1X1, CHEM 215, or CHEM 217; major in materials science and engineering or chemical and biological engineering; concurrent enrollment in MAT\_SCI 302.

### **MAT\_SCI 302-0 Introduction to Materials Laboratories (0.34 Unit)**

Lab for students taking MAT\_SCI 301. Topics related to: Bonding, crystal structure and defects in solids. Phase diagrams in condensed matter systems. Equilibrium and nonequilibrium development of microstructures. Processing/structure/property/performance relationships underlying behavior of metals, ceramics, polymers, and

composites. Mechanical, electrical, chemical properties of engineering materials. To be taken concurrently with MAT\_SCI 301-0.

### **MAT\_SCI 314-0 Thermodynamics of Materials (1 Unit)**

Classical and statistical thermodynamics; entropy and energy functions in liquid and solid solutions, and their applications to phase equilibria. Lectures, problem solving. Materials science and engineering degree candidates may not receive credit for 314 with or after CHEM 342-1. Prerequisite: CHEM 132-0, CHEM 152-0, CHEM 172-0 or CHEM 1X2; MATH 228-1 or MATH 230-1; or PHYSICS 135-1 or equivalent.

### **MAT\_SCI 315-0 Phase Equilibria & Diffusion of Materials (1 Unit)**

Application of thermodynamics to ternary phase equilibria. Defects and diffusion in solids. Interdiffusion. Short-circuit diffusion. Defects and transport in ionic solids. Lectures, problem solving, and laboratory. Prerequisite: MAT\_SCI 201-0 or MAT\_SCI 301-0 or equivalent and MAT\_SCI 314-0 or equivalent.

### **MAT\_SCI 316-1 Microstructural Dynamics (1 Unit)**

Principles underlying development of microstructures. Defects, diffusion, phase transformations, nucleation and growth, thermal and mechanical treatment of materials. Lectures, laboratory.

Prerequisite: MAT\_SCI 315-0 or equivalent.

### **MAT\_SCI 316-2 Microstructural Dynamics (1 Unit)**

Principles underlying development of microstructures. Defects, diffusion, phase transformations, nucleation and growth, thermal and mechanical treatment of materials. Lectures, laboratory.

Prerequisite: MAT\_SCI 316-1 or instructor consent.

### **MAT\_SCI 318-0 Materials Selection (1 Unit)**

Methods of specifying materials and the processes for making them in the context of a given application. Service performance of materials based on their physical and chemical properties. Case studies and use of high-level databases.

Prerequisite: MAT\_SCI 201-0 or equivalent.

### **MAT\_SCI 331-0 Soft Materials (1 Unit)**

Different kinds of polymeric materials. Relationships between structure and physical properties; rubber elasticity, the glassy state, crystallinity in polymers. Lectures, laboratory.

Prerequisites: MAT\_SCI 301-0 or equivalent; MAT\_SCI 314-0 or CHEM 342-1; MAT\_SCI 316-1 and MAT\_SCI 316-2 highly recommended.

### **MAT\_SCI 332-0 Mechanical Behavior of Solids (1 Unit)**

Plastic deformation and fracture of metals, ceramics, and polymeric materials; structure/property relations. Role of imperfections, state of stress, temperatures, strain rate. Lectures, laboratory.

Prerequisites: MAT\_SCI 316-1; MAT\_SCI 316-2 (may be taken concurrently); CIV\_ENV 216-0 or consent of instructor.

### **MAT\_SCI 336-0 Synthetic Design of New Materials (1 Unit)**

The design of new materials targeting important technological functions through processes requiring chemical reactions, synthesis of molecules, and molecular design for self-assembly and 3D printing. Fundamental principles and design strategies, including polymerization, biosynthesis and biocompatibility, design of molecular precursors for electronic materials and ceramics, synthesis of nanomaterials, composite and hierarchical structures.

Prerequisite: junior standing in materials science and engineering or consent of instructor.

### **MAT\_SCI 340-0 Ceramic Processing (1 Unit)**

Steps in production of fired ceramic articles. Powder preparation and characterization, compact formation, slip casting, extrusion and injection molding; firing, liquid-phase and solid-state sintering. Lectures, laboratory. Prerequisite: MAT\_SCI 316-1 or equivalent.

**MAT\_SCI 351-1 Introductory Physics of Materials (1 Unit)**

Quantum mechanics; applications to materials and engineering. Band structures and cohesive energy; thermal behavior; electrical conduction; semiconductors; amorphous semiconductors; magnetic behavior of materials; liquid crystals. Lectures, laboratory, problem solving. Prerequisites: MAT\_SCI 301-0 or equivalent or consent of instructor; GEN\_ENG 205-4 or equivalent; PHYSICS 135-2, PHYSICS 135-3; MAT\_SCI 351-1 is prerequisite for MAT\_SCI 351-2.

**MAT\_SCI 351-2 Introductory Physics of Materials (1 Unit)**

Quantum mechanics; applications to materials and engineering. Band structures and cohesive energy; thermal behavior; electrical conduction; semiconductors; amorphous semiconductors; magnetic behavior of materials; liquid crystals. Lectures, laboratory, problem solving. Prerequisites: MAT\_SCI 301-0 or equivalent or consent of instructor; GEN\_ENG 205-4 or equivalent; PHYSICS 135-2, PHYSICS 135-3; MAT\_SCI 351-1 is prerequisite for MAT\_SCI 351-2.

**MAT\_SCI 353-0 Bioelectronics (1 Unit)**

Development and design of sensors, stimulators, and their medical devices for biointegrated electronics. Materials design and fabrication of passive and active components for sensitive, multimodal, and robust wearable and implantable devices.

**MAT\_SCI 354-0 Bioelectronics Lab (1 Unit)**

Laboratories focused on the practical implementation, instrumentation, and fabrication of wearables and skinsensing. Applications range from vital sign monitoring to rehabilitation.

Prerequisites: BMD\_ENG 353 or MAT\_SCI 353. Concurrent enrollment is acceptable.

**MAT\_SCI 355-0 Electronic Materials (1 Unit)**

Principles, models, and characterization of semiconductor materials. Crystal growth and doping. Diffusion, epitaxy, and monolithic processes. Current transport, non-equilibrium processes, thin films, low-mobility materials, and interfaces.

Prerequisite: MAT\_SCI 316-1 or consent of instructor.

**MAT\_SCI 357-0 Nanomagnetic Materials for Information Storage (1 Unit)**

Overview of materials used for magnetic data storage and of the recording and read processes. Information storage systems, such as optical, solid-state, and probe. Theoretical background for understanding the four energy terms that control the properties of magnetic materials when they are patterned at the nanoscale.

**MAT\_SCI 358-0 Modeling and Simulation in Materials Science and Engineering (1 Unit)**

The course covers the essential methods and principles for modeling and simulating the structure, properties, and behavior of materials. It focuses on constructing models and identifying approaches to test either theoretical descriptions or experimental observations of materials phenomena on a computer. The course balances breadth versus depth of topics with the goal of producing researchers literate in computational materials science and its applicability across different length scales. Students will construct structure-property models of atomic assemblies, molecules, and solids using first-principles electronic structure (such as density-functional theory), deterministic (molecular dynamics), statistical methods (Monte Carlo and (Un)Supervised Learning), and finite elements models. Computational laboratories will give students extensive hands-on experience with several powerful modern materials modeling codes. Prerequisite: MAT\_SCI 314-0, MAT\_SCI 315-0, MAT\_SCI 316-1, and MAT\_SCI 351-1.

**MAT\_SCI 360-0 Introduction to Electron Microscopy (1 Unit)**

Theories and practice involved in application of scanning electron microscopy and transmission electron microscopy. Lectures, laboratory. Primarily for undergraduates and for graduate students in other departments.

Prerequisites: MAT\_SCI 301-0; PHYSICS 135-2, PHYSICS 135-3 or equivalent.

**MAT\_SCI 361-0 Crystallography & Diffraction (1 Unit)**

Elementary crystallography. Basic diffraction theory; reciprocal space. Applications to structure analysis, preferred orientation. Film and counter techniques. Lectures, laboratory.

Prerequisites: GEN\_ENG 205-4 or equivalent; PHYSICS 135-2, PHYSICS 135-3.

**MAT\_SCI 371-0 Biominerals: Hierarchical Architecture & Function (1 Unit)**

How biologically based processing of mineralorganic composites used by living organisms inspires new approaches to materials synthesis in many critical applications-locomotion (bones), defense (shells), and sensing (light, acceleration, magnetic fields).

Prerequisite: MAT\_SCI 316-2 or equivalent, or consent of instructor.

**MAT\_SCI 376-0 Nanomaterials (1 Unit)**

Introduction to structure-property relationships of materials processed at the nanometer scale. Highly interdisciplinary course appropriate for undergraduate and graduate students in other departments.

Prerequisite: MAT\_SCI 351-1 or consent of instructor.

**MAT\_SCI 380-0 Intro Surface Science & Spectroscopy (1 Unit)**

Surface spectroscopy, including Auger spectroscopy, photoemission, and LEED. Surface dynamics and thermodynamics. Electronic properties of surfaces and interfaces. Gas-surface interactions.

Prerequisite: MAT\_SCI 351-1 or equivalent.

**MAT\_SCI 381-0 Materials for Energy-Efficient Technology (1 Unit)**

A materials science approach to the challenges of energy efficient technology: energy content of materials; advanced materials for energy harvesting, transmission, storage, and conversion; materials for energy efficient transportation and housing. Term paper and oral presentation. Prerequisite: MAT\_SCI 201-0, MAT\_SCI 301-0, or consent of instructor.

**MAT\_SCI 382-0 Electrochemical Energy Materials and Devices (1 Unit)**

Thermodynamics and kinetics of electrochemical processes. Materials for fuel cells, batteries, and electrochemical capacitors, including electrolytes and electrodes. Electrical and mass transport. Effect of microstructure. Electrochemical characterization. Device configurations. Prerequisite: senior standing or consent of instructor.

**MAT\_SCI 385-0 Electronic and Thermal Properties of Materials (1 Unit)**

Thermoelectric Devices. Solid-state electronic structure from a solid-state chemistry perspective, phonons in complex materials, electronic and thermal transport at room temperature and above (semi-classical) of metals, semiconductors and some insulators. Familiarity with quantum mechanics and the concept of density-of-states for electrons and phonons. MAT\_SCI 351-1 or equivalent is recommended but not required.

**MAT\_SCI 390-0 Materials Design (1 Unit)**

Analysis and control of microstructures. Quantitative process/structure/property/performance relations, with case studies. Computer lab for modeling multicomponent thermodynamics and transformation kinetics. Prerequisites: MAT\_SCI 315-0, MAT\_SCI 316-1, MAT\_SCI 316-2, or consent of instructor.

**MAT\_SCI 391-0 Process Design (1 Unit)**

Processing of materials. Design and analysis of experiments to identify and optimize key parameters to control properties and performance. Resolving conflicting requirements. Statistical process control.

Prerequisite: MAT\_SCI 201 or 301 or faculty consent.

**MAT\_SCI 394-0 Honors Project in Materials Science (1 Unit)**

Independent study and/or research linked to MAT\_SCI 396-1 and MAT\_SCI 396-2. Comprehensive report on a specific area of modern materials science and engineering. Prerequisite: registration in department honors program.

**MAT\_SCI 395-0 Special Topics in Materials Science and Engineering (1 Unit)**

Topics suggested by students or faculty and approved by the department.

**MAT\_SCI 396-1 Senior Project in Materials Science and Engineering (1 Unit)**

To be taken in two consecutive quarters. Independent basic or applied research project, conceived and performed under the direction of a department faculty member. Prerequisite: senior standing in the materials science and engineering or materials science program.

**MAT\_SCI 396-2 Senior Project in Materials Science and Engineering (1 Unit)**

To be taken in two consecutive quarters. Independent basic or applied research project, conceived and performed under the direction of a department faculty member. Prerequisite: senior standing in the materials science and engineering or materials science program.

**MAT\_SCI 397-0 Special Topics in Materials Science and Engineering (0.34 Unit)**

Special Topics in Materials Science and Engineering; laboratory emphasis.

**MAT\_SCI 399-0 Projects (1 Unit)** Individual problems, including library and design work; comprehensive report on a specific phase of modern materials science. Credit to be arranged.

## Materials Science and Engineering Degree

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

## Requirements (48 units)

### Core Courses (27 units)<sup>1</sup>

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:<sup>2</sup></b>	
PHYSICS 135-2 & PHYSICS 135-3	General Physics and General Physics
CHEM 131-0 & CHEM 132-0  or CHEM 151-0 & CHEM 152-0  or CHEM 171-0 & CHEM 172-0	Fundamentals of Chemistry I and Fundamentals of Chemistry II  General Chemistry I and General Chemistry II  Advanced General Inorganic Chemistry and Advanced General Physical Chemistry
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

### Major Program (21 units)

Course	Title
<b>15 required courses:</b>	
CIV_ENV 216-0	Mechanics of Materials I
MAT_SCI 301-0	Introduction to Materials Science and Engineering Principles

MAT_SCI 314-0	Thermodynamics of Materials
MAT_SCI 315-0	Phase Equilibria & Diffusion of Materials
MAT_SCI 316-1 & MAT_SCI 316-2	Microstructural Dynamics and Microstructural Dynamics
MAT_SCI 331-0	Soft Materials
MAT_SCI 332-0	Mechanical Behavior of Solids
MAT_SCI 351-1 & MAT_SCI 351-2	Introductory Physics of Materials and Introductory Physics of Materials
MAT_SCI 361-0	Crystallography & Diffraction
MAT_SCI 390-0	Materials Design
MAT_SCI 391-0	Process Design
MAT_SCI 396-1 & MAT_SCI 396-2	Senior Project in Materials Science and Engineering and Senior Project in Materials Science and Engineering

**6 technical elective courses in engineering, natural sciences (usually chemistry or physics), and mathematics chosen to fulfill an area of concentration**

No more than 3 of the 6 units may be 200-level courses.

At least 2 of the 6 must be 300-level materials science and engineering courses.

Examples of programs for concentrations in biomaterials, design and manufacturing, electronic materials, metals and ceramics, nanomaterials, polymeric materials, surface science, and sustainable materials are described in a departmental manual for degree candidates.

No more than 1 unit of MAT\_SCI 394-0 Honors Project in Materials Science or MAT\_SCI 399-0 Projects may be counted.

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

## Mechanical Engineering

[mccormick.northwestern.edu/mechanical](http://mccormick.northwestern.edu/mechanical)

Mechanical engineering is critical to nearly all engineered systems. From large-scale highly-integrated systems such as aircraft down to nanoscale bio-inspired materials design, if physical motion or mechanics is involved, mechanical engineers play a central role.

The interdisciplinarity of modern mechanical engineering is represented in the diversity of the backgrounds and research of the mechanical engineering faculty. For example, the mechanical engineering faculty have degrees in civil engineering, computer science, electrical engineering, neuroscience, physics, robotics, and other fields, in addition to mechanical engineering. Similarly, Northwestern mechanical engineering graduates move on to a wide variety of professions and graduate programs, as the fundamental skills provided by the mechanical engineering degree are in high demand in many fields.

The first part of the curriculum is devoted to mathematics, physics, chemistry, computer programming, and design thinking. With this background, the core of the mechanical engineering degree includes study in electronics design, solid mechanics, fluid mechanics, thermodynamics, manufacturing, and dynamics and design of machines.

The mechanical engineering degree culminates in a two-quarter capstone design project, where students work in teams to hone their skills in

human-centered design, mathematical and computer-aided analysis, mechanical design, advanced manufacturing and prototyping, systematic experimentation and testing, and professional documentation.

The mechanical engineering degree provides tremendous flexibility to customize the curriculum to the student's interests and professional goals. This flexibility also reflects the expertise of the faculty and rapidly emerging areas of mechanical engineering.

Curricular flexibility is provided in the form of six courses in one of nine concentrations: a "breadth" concentration, providing advanced training in core and emerging areas of mechanical engineering, and eight specialized concentrations, including aerospace engineering; design; energy and sustainability; engineering mechanics of materials and structures; fluids, energy, and thermal systems; manufacturing; micro-nano engineering; and robotics.

- ME Breadth: The ME Breadth concentration gives students the flexibility to tailor their academic program to their own interests in this rapidly diversifying field, encompassing areas such as robotics, automated manufacturing, biological molecular machines, thermodynamics, fluid dynamics, computational mechanics, composite materials, and tribology.
- Aerospace Engineering: The Aerospace Engineering concentration includes the design and development of aerial and space vehicles. It emphasizes a combination of mechanics (solids and thermo-fluids), materials science (such as advanced composites, ceramics, and polymers), and control systems.
- Design: The Design concentration focuses on methodologies for product design supported by innovation, systematic design processes, computational design methods, and design thinking incorporating manufacturing and life cycle considerations.
- Energy Systems and Sustainability: The Energy Systems and Sustainability concentration emphasizes the mechanical engineering aspects of energy conversion, life cycle analysis, conservation, policy, and energy economics and management.
- Manufacturing: The Manufacturing concentration is directed toward planning and selecting manufacturing methods, design for manufacture, computer-aided flexible automation and robotics, digital manufacturing, and increasing the efficiency and productivity of current and emerging manufacturing technologies.
- Mechanical Sciences: The Mechanical Sciences concentration is designed to prepare students for graduate study in Mechanical Engineering through an emphasis on experimental and computational methods used in research and providing a broad introduction to techniques used in more specialized engineering fields.
- Robotics: The Robotics concentration includes design of robotic hardware, dynamics, motion planning and control, human-robot interaction, sensing, and artificial intelligence for robots.

A listing of courses that satisfy the requirements of each concentration may be found on the department website (<https://www.mccormick.northwestern.edu/mechanical/>).

## Program of Study

- Mechanical Engineering Degree (p. 203)

**MECH\_ENG 222-0 Thermodynamics & Statistical Mechanics - I (1 Unit)**  
Basic thermodynamics, applications to energy efficiency and climate change, and introduction to statistical thermodynamics. Prerequisite: MATH 220-2 and GEN\_ENG 205-3.

### MECH\_ENG 224-0 Scientific and Embedded Programming in Python (1 Unit)

Python is arguably now the world's foremost programming language. It is the go-to coding language for data scientists, machine learning researchers, design engineers, and anyone who needs to grab and process the vast amounts of data online, from networked sensors, or smart devices. Recently Python has become practical for coding in embedded systems, as well. Embedded microcontrollers are relevant for our annual robot design competition, NU engineering teams (Solar car, Baja), internships, and experimental apparatuses. Our approach to coding emphasizes algorithm creation, debugging, methodical creation and partitioning in a modern notebook framework, as well as hardware-level access for microcontroller applications. The course is taught in an active learning format. Prerequisite: GEN\_ENG 205-1 or GEN\_ENG 206-1.

**MECH\_ENG 233-0 Electronics Design (1 Unit)** Design and prototyping of analog and digital electronic circuits using semiconductor devices: diodes, transistors, op amps, logic chips, etc. Optical and other sensors, power electronics, filters, and feedback control. Extensive hands-on construction and debugging. Intended for engineers in all disciplines.

**MECH\_ENG 240-0 Intro to Mechanical Design and Manufatcng (1 Unit)** Introduction to strategy and methods of designing, manufacturing, and testing of mechanical products. Material properties and selection methodology, engineering drawing and CAD, and simple manufacturing processes. Prerequisites: MAT\_SCI 201-0; CIV\_ENV 216-0.

**MECH\_ENG 241-0 Fluid Mechanics I (1 Unit)** Fundamentals of fluid mechanics. Properties and statics of fluids. Kinematics and dynamics of fluid motion-continuity, momentum, and energy equations. Dimensional analysis, flow in closed conduits. Prerequisites: MATH 228-2 (may be taken concurrently) and GEN\_ENG 205-4.

**MECH\_ENG 301-0 Introduction to Robotics Laboratory (1 Unit)** A laboratory-based introduction to robotics. Focus will be on both hardware (sensors and actuators) and software (sensor processing and behavior development). Topics will include: the basics in kinematics, dynamics, control and motion planning; and an introduction to Artificial Intelligence (AI) and Machine Learning (ML). Cross-listed as COMP\_SCI 301-0.

### MECH\_ENG 314-0 Machine Dynamics (1 Unit)

This class covers the foundations of rigid multi-body mechanics. Topics include geometry of rigid bodies, rotating bodies, Lagrangian mechanics and variational principles, conservation of energy and momentum, symmetries, impact dynamics, and numerical methods that may be used to simulate mechanical systems. Students numerically simulate rigid body systems and use rigid body geometry to visualize simulations. Prerequisite: GEN\_ENG 205-4.

### MECH\_ENG 315-0 Theory of Machines: Design of Elements (1 Unit)

Factors influencing the proportioning of machine elements-stresses, deformations, and failure criteria-as applied to shafts, springs, belts, bearings, gears. Lectures, laboratory. Prerequisite: MECH\_ENG 240-0.

### MECH\_ENG 316-0 Mechanical Systems Design (1 Unit)

Design of mechanical systems such as cams, multi-bar linkages, and precision machines. Design principles and best practices. Case studies and team-based projects. Prerequisite: MECH\_ENG 315-0.

### MECH\_ENG 320-0 Micro- and Nanomechanical Properties of Surfaces (1 Unit)

Micro and nanomechanical interactions between surfaces, fractal nature of surfaces, interfacial forces, principles of micromechanics, characterization of surfaces using atomic force microscopy, optical interferometry, and nanoindentation.

### MECH\_ENG 322-0 Thermodynamics and Statistical Mechanics II (1 Unit)

Classical and statistical thermodynamics.

Prerequisite: MECH\_ENG 222-0.

#### **MECH\_ENG 327-0 Finite Elements for Stress Analysis (1 Unit)**

Development of finite elements from variational principles and application to static stress analysis. Introduction to techniques for transient and generalized field problems. Computer implementation of finite element techniques. Taught with CIV\_ENV 327-0; may not receive credit for both courses.

#### **MECH\_ENG 328-0 Computational Failure Analysis (1 Unit)**

The course will cover the use of the scientific method for accident investigation, hypothesis development, and the use of the finite element method to analyze the root cause of a failure. Practical application problems for both civil and mechanical structures will be analyzed using commercial finite element codes (Abaqus, Hypermesh, LS-Dyna).

Prerequisite: CIV\_ENV 327-0 or MECH\_ENG 327-0.

#### **MECH\_ENG 329-0 Mechanistic Data Science for Engineering (1 Unit)**

Introduce mechanistic data science for engineering through the integration of mathematical scientific principles using six basic#data science concepts: multimodal data generation and collection, extraction of mechanistic features, knowledge-driven dimension reduction, reduced order surrogate models, regression and classification models, and system and design. These concepts will be implemented using Python and MATLAB for engineering applications.

#### **MECH\_ENG 333-0 Introduction to Mechatronics (1 Unit)**

Introduction to microprocessor-controlled electromechanical systems. Interfacing sensors and actuators to computers, electrical and mechanical prototyping, dissection of a commercial product. Final team project.

Prerequisite: MECH\_ENG 233-0 or ELEC\_ENG 221-0 or BMD\_ENG 308-0, or consent of instructor.

#### **MECH\_ENG 340-1 Computer Integrated Manufacturing: Manufacturing Processes (1 Unit)**

Use of computers to improve productivity and reduce costs in the manufacture of discrete parts and assemblies. Manufacturing processes: Analysis and evaluation of process usage in the contemporary manufacturing environment.

Prerequisite: MECH\_ENG 240-0 or consent of instructor.

#### **MECH\_ENG 340-2 Computer Integrated Manufacturing: CAD/CAM (1 Unit)**

Use of computers to improve productivity and reduce costs in the manufacture of discrete parts and assemblies. CAD/ CAM: Geometric modeling, dimensioning systems, tolerances, design for manufacture, programming of machine tools.

Prerequisite: MECH\_ENG 340-1 or consent of instructor.

#### **MECH\_ENG 340-3 Computer Integrated Manufacturing: Automation (1 Unit)**

Use of computers to improve productivity and reduce costs in the manufacture of discrete parts and assemblies. Manufacturing automation: sensors, actuators, and computers for automation; principles of computer control; programmable logic controllers; robotic devices; assembly automation.

Prerequisite: MECH\_ENG 340-2 or consent of instructor.

#### **MECH\_ENG 341-0 Computational Methods for Engineering Design (1 Unit)**

Introduction to a wide range of computational techniques for engineering design. Modeling, simulation, optimization, design software, examples, and projects with emphasis on computational techniques for design and manufacturing related applications.

Prerequisite: senior standing or consent of instructor.

#### **MECH\_ENG 346-0 Introduction to Tribology (1 Unit)**

Fundamentals of surface contact: surface topography, asperity contact, interfacial phenomena. Friction theories and wear mechanisms. Temperatures in sliding contacts. Hydrodynamic, hydrostatic, elastohydrodynamic, and boundary lubrication.

#### **MECH\_ENG 359-0 Reliability Engineering (1 Unit)**

Probability concepts and random variables. Failure rates and reliability testing. Wearin, wear-out, random failures. Probabilistic treatment of loads, capacity, safety factors. Reliability of redundant and maintained systems. Fault tree analysis.

Prerequisite: GEN\_ENG 205-4.

#### **MECH\_ENG 360-0 Mechanics of Sports (1 Unit)**

Applications of mechanics and mathematical modeling to sports, including baseball, basketball, golf, soccer, swimming, and running, among others.

Introduction to the biomechanics of sports.

#### **MECH\_ENG 362-0 Stress Analysis (1 Unit)**

Theory of elasticity: elastic stability, principle of minimum potential energy, Rayleigh-Ritz methods. Introduction to finite element methods of stress analysis: computer implementation and use of commercial codes. Structural analysis of rods, beams, columns, and plates.

Prerequisite: CIV\_ENV 216-0.

#### **MECH\_ENG 363-0 Mechanical Vibrations (1 Unit)**

Analysis of vibrations in single and multi-degree of freedom systems. Free and forced vibrations with various types of damping. Response to steady-state and transient excitations.

Prerequisite: MECH\_ENG 314-0.

#### **MECH\_ENG 364-0 Introduction to Aerospace Engineering (1 Unit)**

The purpose of the course is to learn the language of aerospace engineering and to explore emerging concepts in this field. This course will cover essential topics in areas relevant to aerospace engineering including Aerodynamics, Flight Dynamics, Propulsion, and Orbital Mechanics. Computational tools for structural analysis, fluid flow calculations, and flight dynamics modeling will be introduced.

Prerequisites: CIV\_ENV 216-0, MECH\_ENG 241-0 or equivalent.

#### **MECH\_ENG 366-0 Finite Elements for Design & Optimizatn (1 Unit)**

Numerical methods for interaction and optimal CAD. Fully stressed design; design sensitivity analysis and descent methods; optimality criteria to automated design.

Prerequisites: senior standing; MECH\_ENG 327-0 or consent of instructor.

#### **MECH\_ENG 367-0 Quantitative Methods in Life Cycle Analysis (1 Unit)**

Lifecycle analysis (LCA) framework for environmental assessment of technology systems, focusing on modeling methods for systems mass and energy flows, process and input-output-based systems inventories, environmental impact analysis, and methods for robust engineering decisions. MECH\_ENG 367-0 is taught with CHEM\_ENG 367-0; may not receive credit for both courses.

#### **MECH\_ENG 371-0 Combustion Engines (1 Unit)**

Theoretical and actual cycles, combustion, detonation, carburetion, fuels, performance characteristics, and fuel-cell power.

#### **MECH\_ENG 373-0 Engineering Fluid Mechanics (1 Unit)**

Laminar and turbulent duct flows. Boundary layers and potential flows. Lift and drag forces. Thermodynamics and mechanics of compressible flow. Nozzle flows and choking. Wave motion and shock waves.

Applications to fluid machinery.

Prerequisite: MECH\_ENG 241-0.

#### **MECH\_ENG 377-0 Heat Transfer (1 Unit)**

Fundamentals of heat transfer by conduction, convection, and radiation. Steady and transient heat conduction in solids. Forced and free convection in fluids. Properties of thermal radiation. Radiation heat transfer between solids. Solar radiation.  
Prerequisite: MECH\_ENG 241-0.

#### **MECH\_ENG 378-0 Applied Computational Fluid Dynamics and Heat Transfer (1 Unit)**

This course provides an understanding of the theory and process of computational flow analysis by giving students the opportunity to use commercial simulation software (ANSYS/Fluent) to solve fluid flow problems. Topics covered include conservation of mass, momentum and energy; boundary conditions; turbulence modeling; mesh generation; solution procedures; and verification/validation. Topics will be presented through lectures, hands-on computer lab sessions, and team-based projects.

#### **MECH\_ENG 380-0 Thermal Energy Systems Design (1 Unit)**

Applications of the principles of energy engineering analysis to the design of thermal systems. Consideration of such systems as air conditioning, oil piping, refrigeration, fluid distribution, and pneumatic control. Projects will be tailored to the class. Solution of open-ended design problems including introduction to EES (Engineering Equation Solver) software that has built-in thermophysical properties.  
Prerequisite: Basic Thermodynamics or equivalent.

#### **MECH\_ENG 381-0 Introduction to Micro-electro-mechanical Systems (1 Unit)**

Introduction to MEMS devices, with an emphasis on their manufacturing and mechanical behavior. Materials properties, microfabrication technology, mechanical behavior of microstructures, design, and packaging. Case studies on sensors, wireless communications, fluidic systems, microengines, and biological devices.

Prerequisite: CIV\_ENV 216-0 or consent of instructor.

#### **MECH\_ENG 382-0 Experiments in Micro- and Nano Science and Engineering (1 Unit)**

Interdisciplinary topics spanning the physical and biological sciences and engineering. Seven integrated labs in which students acquire hands-on experience in various aspects of micro-and nanoscience and engineering: cleanroom microfabrication, flow visualization in micro-channels, nanomechanics, AFM and dippen nanolithography, multiphysics computational tools, and experimental techniques to evaluate micro-and nanoscale devices.

Prerequisite: MECH\_ENG 381-0 or consent of instructor.

#### **MECH\_ENG 390-0 Intro to Dynamic Systems (1 Unit)**

Modeling the dynamic behavior of physical systems. Concepts of causality, dependent and independent storages, and state. Introduction to bond graphs. Generation of state equations; analytical and computer simulation of system behavior. Application to problems of engineering interest.

Prerequisites: MECH\_ENG 241-0; CIV\_ENV 216-0; GEN\_ENG 205-4.

#### **MECH\_ENG 395-0 Special Topics in Mechanical Engineering (1 Unit)**

Topics suggested by students or faculty members and approved by the department.

**MECH\_ENG 398-1 Engineering Design I (1 Unit)** Experience in the creative process of design. Defining product specifications, developing and analyzing ideas, using CAD drawings, building physical prototypes, demonstrating feasibility, and achieving full alpha-level functionality.  
Prerequisite: senior standing or consent of department.

**MECH\_ENG 398-2 Engineering Design II (1 Unit)** Experience in the creative process of design. Defining product specifications, developing and analyzing ideas, using CAD drawings, building physical prototypes,

demonstrating feasibility, and achieving full alpha-level functionality.  
Prerequisite: senior standing or consent of department.

**MECH\_ENG 399-0 Projects (1-3 Units)** Special studies to be done under faculty direction. Credit to be arranged.

## **Mechanical Engineering Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Requirements (48 units)**

#### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:<sup>2</sup></b>	
PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-2 & PHYSICS 136-3	General Physics and General Physics and General Physics Laboratory and General Physics Laboratory
CHEM 131-0 & CHEM 141-0 or CHEM 151-0 & CHEM 161-0 or CHEM 171-0 & CHEM 181-0	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I General Chemistry I and General Chemistry Laboratory I Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

### **Major Program (21 units)**

Course	Title
<b>12 required courses</b>	
CIV_ENV 216-0	Mechanics of Materials I
MAT_SCI 201-0	Introduction to Materials Science and Engineering Principles
MECH_ENG 222-0	Thermodynamics & Statistical Mechanics - I <sup>4</sup>
MECH_ENG 224-0 or COMP_SCI 211-0	Scientific and Embedded Programming in Python Fundamentals of Computer Programming II
MECH_ENG 233-0	Electronics Design <sup>3</sup>
MECH_ENG 240-0	Intro to Mechanical Design and Manufactrng
MECH_ENG 241-0	Fluid Mechanics I
MECH_ENG 314-0	Machine Dynamics
MECH_ENG 315-0	Theory of Machines: Design of Elements
MECH_ENG 340-1	Computer Integrated Manufacturing: Manufacturing Processes
MECH_ENG 377-0	Heat Transfer
MECH_ENG 390-0	Intro to Dynamic Systems
<b>2 capstone courses</b>	
MECH_ENG 398-1 & MECH_ENG 398-2	Engineering Design I and Engineering Design II (taken sequentially and counting toward the final 12 units taken before graduation)

<b>1 math/science technical elective course<sup>5</sup></b>	
Any 300-level course listed as 100% Mathematics & Basic Science Topics on the ABET Partitioning Table or COMP_SCI 212-0 or CHEM 215-1	
<b>6 courses to satisfy a concentration area listed below<sup>6</sup></b>	

Mechanical Engineering Breadth

Aerospace Engineering
Design
Energy Systems and Sustainability
Manufacturing
Mechanical Sciences
Robotics

- <sup>1</sup> See Core Courses Requirements (p. 144) for details.
- <sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.
- <sup>3</sup> Students planning to take advanced ELEC\_ENG courses may petition to substitute ELEC\_ENG 221-0 Fundamentals of Circuits.
- <sup>4</sup> May not be taken with CHEM 342-1 Thermodynamics or CHEM\_ENG 211-0 Thermodynamics .
- <sup>5</sup> Course must be listed as 100% Mathematics & Basic Science Topics on the ABET Partitioning Table (<https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html>) or appear on the Mechanical Engineering Math/Science Technical Elective table (<https://www.mccormick.northwestern.edu/mechanical/documents/pre-approved-list-of-3xx-level-math-science-courses-08192021.pdf>)
- <sup>6</sup> Courses and other concentration requirements are specified on the Mechanical Engineering department website (<https://www.mccormick.northwestern.edu/mechanical/academics/undergraduate/curriculum/>). Students should declare their concentration no later than the end of their 2nd year.

## Segal Design Institute

[design.northwestern.edu](http://design.northwestern.edu)

### Human-Centered Design Projects

The Segal Design Institute is the unit of the McCormick School that promotes the importance of design throughout the undergraduate curriculum and is dedicated to fostering innovation among engineering and non-engineering students and faculty. Our students work on projects that produce tangible results and improve the lives of people around the world. Our team-based approach to education encourages students to use design thinking together to solve complex, authentic problems in product, interaction, service, and business design.

### Programs of Study

- Manufacturing and Design Engineering Degree (p. 206)
- Segal Design Certificate (p. 207)

**DSGN 106-1 Design Thinking and Communication (0.5 Unit)** Integrated introduction to the user-centered design process and technical communication. Students will address challenges proposed by project partners by identifying unmet needs, conducting research, generating and evaluating potential solutions, and finally, presenting a final design concept with supporting documentation. Students also enhance their abilities in equitable teamwork, project management, fabrication skills, and producing written, oral, graphical, and interpersonal communication. One lecture, two section meetings, and lab. Co-registration with

ENGLISH 106-1 required. Primarily intended for first-year engineering students. Prerequisite: Reserved for McCormick students only.

#### DSGN 106-2 Design Thinking and Communication (0.5 Unit)

Integrated iteration on the user-centered design process and technical communication. This course will build on the learning objectives from DTC-1 while adding more focus on ethics in design and communication, equitable distribution of teamwork, project management, documenting and communicating progress, and exploring a wider variety of project topics. One lecture, two section meetings, and lab. Co-registration with ENGLISH 106-2 required. Primarily intended for first-year engineering students. Prerequisite: DSGN 106-1.

**DSGN 208-0 Design Thinking and Doing (1 Unit)** Project-based introduction to design, structured as a hands-on studio course. Students learn methods of design innovation and work in teams, exploring ideas, prototyping solutions, and interacting with users. This class is intended for first-year students, sophomores, and juniors. Prerequisite: Reserved for First-Year Students, Sophomores, and Juniors. Non-McCormick students only.

**DSGN 220-0 Introduction to Design Sketching (0.5 Unit)** Design sketching to increase one's skills as a basic but essential form of communication. It is the medium for preliminary ideation. Basic rules and skills in a design studio setting.

**DSGN 230-0 Machining Basics (0.5 Unit)** The intent of this class is to introduce students to a range of basic manufacturing techniques. Students will learn machine tool technology theory and gain familiarity through hands-on practice with manual machine tools and other shop equipment. All the skills taught will culminate in a final project which each student is expected to manufacture on their own. All students will be expected to complete safety training modules.

**DSGN 240-0 Introduction to Solid Modeling: Solidworks (0.5 Unit)** Solid modeling by creating three-dimensional shapes through two-dimensional sketches. Assemblies of individual parts. CAD modeling theory; modeling objects using different approaches for creating identical features. Lecture balanced with hands-on use of SolidWorks.

**DSGN 241-0 Wireframing and App Design Basics (0.5 Unit)** Translate your app ideas into real pixels. Whether you're interested in becoming a product designer, product manager, or just have an app idea— together we'll shape ideas into tangible mockups. This beginner class will take you from sketching on pen and paper to generating interfaces and flows in industry tools like Miro and Figma. You'll see how typography, hierarchy and unity play a role in the product design process, and continue on testing your app before handing it off to product teams or engineers.

**DSGN 243-0 Visual Thinking for Design (0.5 Unit)** Complements the traditional design research and ideation process using visual stimuli. Students will work with visual thinking methods to help expand their understanding of a problem space resulting in a greater generation of ideas and a more tangible organization of our thoughts. DSGN 220-0 and/or some experience with Adobe Photoshop is helpful but not necessary.

**DSGN 295-0 Introductory Topics in Design (0.5-1 Unit)** Topics suggested by students or faculty members and approved by the institute; taught at an intermediate level.

**DSGN 297-0 Intermediate Topics in Engineering Design (0.5 Unit)** Topics suggested by students and faculty and approved by the institute.

**DSGN 300-0 Designing Your Life (1 Unit)** Considers an approach to life as a series of design projects to help students craft a total life. Includes seminar-style discussions, role-playing, short writing assignments, hands-on making, guest speakers, and individual mentoring and coaching. Prerequisite: Reserved for Juniors and Seniors.

**DSGN 305-0 Human-Centered Service Design (1 Unit)** Project-based, human-centered design approach to service design, with a focus on the design of new or improved services that tap deeply into people's needs for connectedness, belonging, and autonomy. Project outcomes may include organizational structures, service designs, and designed products. Prerequisite: DSGN 106-1 or DSGN 208-0.

**DSGN 306-0 User Experience Design (1 Unit)** Project-based studio course covering the full range of user experience design, from screen-based experience to interaction with physical products to end-to-end environment design. Prerequisite: DSGN 106-1 or DSGN 208-0.

**DSGN 308-0 Human-Centered Product Design (1 Unit)** Project-based course focusing on user needs: observational methods, brainstorming, prototyping, business models, and the social and engineering concerns for product design. Prerequisite: DSGN 106-1 or DSGN 208-0.

#### **DSGN 315-0 Design, Technology, and Research (1 Unit)**

A jointly offered CS and Segal learning initiative that empowers students to drive cutting-edge research that shapes new experiences with people and technology. Students work with a mentor to identify a direction of research, explore and iterate over designs, prototype at varying fidelities, build working systems, conduct evaluative studies, and report findings through conference publications. DTR adapts agile development and design-based research practices with scrums, sprints, studio critique, design logs, and pair research. This class may be repeated for credit.

#### **DSGN 320-0 Introduction to Industrial Design Methods (1 Unit)**

Introduces the process of product development from an industrial design perspective, with a focus on exploring form through design sketching.

**DSGN 321-0 Advanced Solid Modeling (0.5 Unit)** Provides advanced instruction on the use of CAD modeling using Solidworks software. Prerequisite: DSGN 240-0 or consent of instructor.

**DSGN 322-0 Rendering (0.5 Unit)** Provides an introduction to Keyshot software, a photorealistic rendering package.

**DSGN 340-0 Performance and Technology: Composition Workshop (1 Unit)** In this course students will use basic mechatronics to create compelling movement-based performances. The course will involve workshop exploration of technologies embedded in performance: robots, media, computer interface. Students will create performance projects and discuss theoretical and historical implications of technologies in performance. Hands-on making and engineering workshops will be incorporated to develop skills in technological crafts such as circuit design and fabrication, toward technologically enhanced performance.

**DSGN 345-0 Computer-Aided Manufacturing (0.5 Unit)** Teaches the NX manufacturing environment to program machining operations for CNC milling, as well as the operation of CNC milling machines. Teaches the complete path from part design to manufacture, including operations, tools, and geometry in NX, manufacturing setup and g-code generation, proper machine setup, operation, troubleshooting and optimization for both 2.5D machining and full CNC machining. Prerequisites: DSGN 106-1 and DSGN 106-2 and one of the following: DSGN 240-0 or MECH\_ENG 240-0.

**DSGN 346-0 Manufacturing Methods for Product Design (1 Unit)** An introduction to manufacturing processes including casting, injection molding, additive manufacturing, extrusion, machining, joining, and forming, using materials commonly found in modern consumer and industrial products. In weekly hands-on labs, students apply theory of manufacturing processes to the design of parts and process tooling for various fabrication methods. Focus will be placed on adjusting design and process parameters to obtain an optimal outcome for a given manufacturing process. Prerequisites: DSGN 106-1 and 106-2, and

MECH\_ENG 240 or instructor approval of previous CAD experience. MaDE students may petition for this course to count in place of the ME 340-1 degree requirement.

**DSGN 348-0 Rapid Prototyping (0.5-1 Unit)** A survey of additive manufacturing methods and hands-on training in the operation of all equipment in the Northwestern Rapid Prototyping lab. Students review the fundamentals and theory behind rapid prototyping methods, materials, applications of RP technology, advanced CAD modeling, and reverse engineering methods. Includes lab work, where students will learn the operation of additive manufacturing machines, laser scanners, and CAD surfacing software. Prerequisites: DSGN 240-0 or MECH\_ENG 240-0, or approval of instructor.

#### **DSGN 350-0 Intellectual Property and Innovation (1 Unit)**

Explores the critical role of designers, business strategists and engineers in the invention/creative process. All issues relating to patents and patentability of inventions, copyrights and the protection of the expressions of ideas, trademarks and source identifiers are reviewed and analyzed in the context of multiple engineering domains.

**DSGN 370-0 Portfolio Development & Presentation (1 Unit)** Creation of an individual portfolio that showcase design work and further career goals. The portfolio physically presents a story that embodies its creator's goals. Prerequisite: Reserved for Juniors and Seniors.

#### **DSGN 376-0 Leonardo, Geometry, and the Art of Manufacturing (1 Unit)**

In Walter Isaacson's 2017 biography of Leonardo da Vinci, the topic of geometry is referenced over 80 times. The only drawings by Leonardo that were published during his lifetime were illustrations for a textbook on geometry. The artist's final journal entry, written only days before his death, included attempts at a geometric proof. A friend of the artist once lamented in a letter, "He devotes much of his time to geometry, and has no fondness at all for the paintbrush." What compelled Leonardo's fascination with this subject? In this interdisciplinary class, we will explore Leonardo's geometric studies, using them as a vehicle for our own studies of artistic and industrial processes. Students will collaborate with artists, manufacturers, and technologists to produce sculptural objects in a range of materials. The course will culminate in a public iron pour in which we will attempt to translate several of Leonardo's sketches into cast-iron 3D pieces using a historical furnace in honor of the artist's work.

**DSGN 380-1 Industrial Design Projects I (1 Unit)** Design thinking, user-centric principles of design and DFM. Development of an industrial design project for your personal portfolio. Concept ideation and sketching; use of discovery research and data visualization; problem framing and prototyping; design for manufacturing, Keyshot rendering, rapid prototyping. Pt 1 in two-course sequence; sequence must be taken in consecutive quarters. Prerequisites: DSGN 243-0 and either DSGN 240-0 or MECH\_ENG 240-0 and either DSGN 220-0 or DSGN 320-0, or consent of the instructor. Reserved for Juniors and Seniors.

**DSGN 380-2 Industrial Design Projects II (1 Unit)** Design thinking, user-centric principles of design and DFM. Development of an industrial design project for your personal portfolio. Concept ideation and sketching; use of discovery research and data visualization; problem framing and prototyping; design for manufacturing, Keyshot rendering, rapid prototyping. Prerequisite: DSGN 380-1.

**DSGN 381-0 Digital Product Development (2 Units)** "In this digital product development course, students will experience the full end-to-end product development lifecycle through ideation, build, and continuous improvement. Students will have an opportunity to explore and apply design thinking and agile/scrum methodologies to a client sponsored

project. This class is by application only. Prerequisite: Students must have taken DSGN 106 or 208 and be in junior or senior standing.”.

**DSGN 382-1 Service Design Studio I (1 Unit)** Explores the human centered approach to the design of services. Students will apply design thinking to client sponsored projects and synthesize both user and client needs to the design of tangible consumer touch points. This includes experience plans, digital interface designs, communication models, organizational designs, systems and/or brand tonality deliverables. Pt 1 in two-course sequence; sequence must be taken in consecutive quarters. Prerequisite: DSGN 305-0 or DSGN 306-0 or DSGN 308-0; or consent of instructor. Reserved for Juniors and Seniors.

**DSGN 382-2 Service Design Studio II (1 Unit)** Explores the human centered approach to the design of services. Students will apply design thinking to client sponsored projects and synthesize both user and client needs to the design of tangible consumer touch points. This includes experience plans, digital interface designs, communication models, organizational designs, systems and/or brand tonality deliverables. Prerequisite: DSGN 382-1.

**DSGN 384-1 Interdisciplinary Product Design Projects I (1 Unit)** Open-ended, team-based product or system design projects in real-world settings. Project research, concept development, professional communication, advanced topics in design. One of DSGN 305-0, DSGN 306-0, or DSGN 308-0 is recommended before taking this course. Pt 1 in two-course sequence; sequence must be taken in consecutive quarters. Prerequisite: DSGN 106-1 or DSGN 208-0. Reserved for Juniors and Seniors.

**DSGN 384-2 Interdisciplinary Product Design Projects II (1 Unit)** Open-ended, team-based product or system design projects in real-world settings. Implementation, evaluation, communication, documentation. Prerequisite: DSGN 384-1.

**DSGN 386-0 Manufacturing Engineering Design (1 Unit)** A hands-on, team-based survey of lean manufacturing concepts such as DFA (design for assembly), DFM (design for manufacturing), automation, quality control, process planning, tooling design, concurrent engineering, and continuous improvement. Students are given the components of an existing product and are challenged to design the manufacturing specifications and process. Design strategy, manufacturing modeling and optimization, engineering documentation, quality control, manufacturing costing and product manufacturing productivity skills are put into practice in a final pilot run of the manufacturing process by each team. Prerequisite: Any IEMS 300 level, MECH\_ENG 340-1, DSGN 308, or consent of instructor. Reserved for Juniors and Seniors.

**DSGN 388-1 MaDE Capstone Sequence I (1 Unit)** The first quarter of a three-quarter, year-long product design and development experience for students in the MaDE program. Senior standing and instructor permission are required.

**DSGN 388-2 MaDE Capstone Sequence II (1 Unit)** The second quarter of a three-quarter, year-long product design and development experience for students in the MaDE program. Senior standing and instructor permission are required.

**DSGN 388-3 MaDE Capstone Sequence III (1 Unit)** The third and final quarter of a three-quarter, year-long product design and development experience for students in the MaDE program. Senior standing and instructor permission are required.

#### **DSGN 395-0 Special Topics (1 Unit)**

Topics relevant to design and approved by the institute. Prerequisite: consent of instructor.

**DSGN 397-0 Advanced Topics in Design (0.5 Unit)** Topics suggested by students and faculty and approved by the institute.

**DSGN 399-0 Independent Study Project (1 Unit)** Independent study on a design topic supervised by a faculty member. Prerequisite: consent of instructor.

## **Manufacturing and Design Engineering Degree**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

### **Requirements (48 units)**

#### **Core Courses (27 units)<sup>1</sup>**

Course	Title
<b>4 mathematics courses (p. 144)</b>	
<b>4 units of basic science:<sup>2</sup></b>	
PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-2 & PHYSICS 136-3	General Physics and General Physics and General Physics Laboratory and General Physics Laboratory
CHEM 131-0 & CHEM 141-0 or CHEM 151-0 & CHEM 161-0 or CHEM 171-0 & CHEM 181-0	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I General Chemistry I and General Chemistry Laboratory I Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
<b>4 engineering analysis and computer proficiency courses (p. 144)</b>	
<b>3 design and communications courses (p. 144)</b>	
<b>7 social sciences/humanities courses (p. 144)</b>	
<b>5 unrestricted electives (p. 144)</b>	

### **Major Program (21 units)**

Course	Title
<b>13 core courses</b>	
CIV_ENV 216-0	Mechanics of Materials I
COMP_SCI 150-0 or MECH_ENG 224-0	Fundamentals of Computer Programming 1.5 Scientific and Embedded Programming in Python
DSGN 308-0 or MECH_ENG 315-0	Human-Centered Product Design Theory of Machines: Design of Elements
IEMS 201-0	Introduction to Statistics <sup>3</sup>
IEMS 307-0	Quality Improvement by Experimental Design
IEMS 310-0	Operations Research
IEMS 382-0	Operations Engineering and Management
MAT_SCI 201-0	Introduction to Materials Science and Engineering Principles
MAT_SCI 318-0	Materials Selection
MECH_ENG 240-0	Intro to Mechanical Design and Manufactrng
MECH_ENG 233-0	Electronics Design
MECH_ENG 340-1 or DSGN 346-0	Computer Integrated Manufacturing: Manufacturing Processes Manufacturing Methods for Product Design
MECH_ENG 340-2 or MECH_ENG 340-3	Computer Integrated Manufacturing: CAD/CAM Computer Integrated Manufacturing: Automation
<b>3 project courses</b>	
DSGN 388-1	MaDE Capstone Sequence I

DSGN 388-2	MaDE Capstone Sequence II
DSGN 388-3	MaDE Capstone Sequence III
<b>1 Manufacturing Engineering Design course</b>	
DSGN 386-0	Manufacturing Engineering Design
<b>4 technical elective courses</b>	
2 engineering courses at the 200- or 300-level	
2 engineering courses at the 300-level	
Courses numbered 395 will need a petition	
Students may only count up to two 399 course towards their tech electives	

<sup>1</sup> See general requirements (p. 144) for details.

<sup>2</sup> PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

<sup>3</sup> IEMS 303-0 Statistics may be substituted if an additional math course, such as IEMS 302-0 Probability, is also taken.

## Segal Design Certificate

This certificate program, administered by the Segal Design Institute, develops a set of design and problem-solving skills that prove valuable in a wide range of careers. The program focuses on applying user-centered design to address real-world problems in team-based, interdisciplinary settings.

Course	Title
<b>Certificate Requirements (6 units)</b>	
<i>1 prerequisite:</i>	
DSGN 106-1 or DSGN 208-0	Design Thinking and Communication Design Thinking and Doing
<i>1 2-quarter design sequence or DSGN 381-0 (2-units):</i>	
DSGN 380-1 & DSGN 380-2 or DSGN 381-0 or DSGN 382-1 & DSGN 382-2 or DSGN 384-1 & DSGN 384-2	Industrial Design Projects I and Industrial Design Projects II Digital Product Development Service Design Studio I and Service Design Studio II Interdisciplinary Product Design Projects I and Interdisciplinary Product Design Projects II
<i>1 portfolio course:</i>	
DSGN 370-0	Portfolio Development & Presentation
<i>3 elective courses from an approved list, including:</i>	
1 DSGN unit	
2 units at the 300 level	
Graduate courses may not be used towards the certificate.	
Course with grades lower than a "C" will not be acceptable for this certificate.	
P/N courses are not allowed (except for DSGN 375-0).	
Electives must be from the approved elective list or approved by petition (no more than one unit by petition).	

Smaller in scope than majors or minors, certificates usually are offered in areas of concentration for which no major or minor exists and are comprised of at least 4 units of coursework uniquely counted, not also applied to any other academic plan or credential. Such coursework may fulfill other degree requirements such as distribution or required electives. Certificates are conferred concurrent with the student's

undergraduate degree. They do not appear on the diploma, but are noted on the transcript.

Students can declare the certificate and submit updates to their courses in MAS (McCormick Advising System) (<https://mas.mccormick.northwestern.edu/>) before the beginning of their final quarter as undergraduates.

# MEDILL SCHOOL OF JOURNALISM, MEDIA, INTEGRATED MARKETING COMMUNICATIONS

[medill.northwestern.edu](http://medill.northwestern.edu)

For students who want to research, report and produce journalism that matters, Medill offers the combination of a top-ranked university and a best-in-class journalism education.

At Medill, reporting and writing are just the start. Students experiment with emerging media, explore global journalism and prepare not only to work in a changing media world but to lead it.

Students learn by doing, turning passions like social justice, politics, global affairs, entrepreneurship, technology, the arts or sports into expertise.

Medill's curriculum allows students to solidify their writing and editing skills and comprises three components:

- The core curriculum is built to put all first-year students on the same page. In these core courses, Medill faculty teach reporting, writing, editing and thinking critically.
- In addition to those core classes, every student selects a concentration in a discipline outside Medill. This allows them to explore political science, history, economics, a language other than English, computer science and much more. Students take a wide variety of courses to ensure a well-rounded education.
- Finally, Medill offers a wide variety of journalism electives. Choose courses that will help you build expertise in the areas you are most passionate about.

Medill also offers a certificate in Integrated Marketing Communications. This allows students to learn how to leverage their journalism skills in marketing communications through research, insight, and strategy.

Developed at Medill, IMC is a data-driven, customer-centric, metrics approach to marketing communications. Medill offers all Northwestern undergraduates the opportunity to learn more about integrated marketing communications by earning an IMC certificate. You will be eligible for an even wider range of career opportunities because the marketing communication skills you will learn in the certificate program are applicable to journalism, media, and many other fields.

## Requirements for the Degree of Bachelor of Science in Journalism

All Medill undergraduates pursue the bachelor of science in journalism degree. They must complete a minimum of 45 units to earn the BSJ. In addition to their studies in journalism, they acquire a strong background in the arts and sciences. The following policies apply:

- Independent of the requirements set by Medill, all students must satisfy the Undergraduate Registration Requirement (p. 27).
- Of the 45 units, at least 27 must be earned in courses outside Medill and at least 14 Medill courses.

- Journalism students must acquire significant professional experience to earn the BSJ. The requirement may be satisfied through a 4-unit Journalism Residency.
- No course may be counted in more than one requirement category, with one exception: Medill students completing a double major in Weinberg College may apply courses used to meet Medill's foundational disciplines toward the second major.
- Exceptions to any degree requirements must be approved by the Medill Student Affairs. Petitions and rules for filing them are available on the Medill Canvas site.

## Grade Requirements

Students must achieve a minimum GPA of 2.0 (C) in all nonjournalism courses taken for a letter grade and a minimum GPA of 2.25 (C+) in journalism courses. In addition, all journalism students are subject to the following grade requirements:

- The journalism GPA is an average of the grades (including F's) in all journalism courses attempted.
- Students who earn a grade of D or worse in a journalism course must retake the course until they have earned a C- or better.
- When courses, including journalism courses, are repeated, both grades are computed in the GPA; one course does not substitute for another.
- Before starting Journalism Residency, students must earn a grade of C+ or better in JOUR 201-1 Fundamentals of Reporting & Writing News, JOUR 201-2 Fundamentals of Video Journalism, JOUR 202-0 Journalism Values, Practice & Trends, JOUR 301-0 Journalism in Practice, a history, representation or business understanding course, JOUR 370-0 Media Law & Ethics and at least two 300-level advanced journalism in practice courses outside the core requirement.
- Students may earn grades of D or worse in no more than one-fifth of the courses taken at Northwestern and offered for graduation.
- Students who do not meet the minimum GPA requirements are placed on academic probation. Continued poor performance will result in further academic disciplinary action, including academic probation, suspension, or dismissal.
- Medill undergraduates are required to take the following courses for letter grades (A, A-, B+, B, B-, C+, C, C-, D, F):
  - All foundational discipline courses
  - All journalism courses except Journalism Residency
  - Courses for the language requirement
  - WCAS concentration courses
- Other courses may be taken pass/no credit (P/N) if that option is available. No more than 3 courses taken P/N may be counted toward the 45 units required for graduation (excluding Journalism Residency). Only 1 course per quarter may be taken P/N.

## Academic Policies

### Academic Warning, Probation, and Dismissal

The University's policies about academic probation and dismissal are on the Academic Standing (p. 26) page. Medill adheres to these policies with the following exceptions and additions:

- A warning letter is sent by email when the student
  - Has a GPA below a C (2.0) for one quarter but a cumulative GPA above 2.5.
  - Receives a grade of D, F, W, X, or Y.

- Merits probation for any reason during his or her first two quarters at Northwestern.
- Academic probation occurs when the student
  - Fails to maintain a C+ average (2.25) in journalism courses.
  - Receives a D or an F in a journalism course.
  - Fails to fulfill the journalism curriculum requirements.
  - Receives more than one grade of W, X, or Y in any one quarter.
  - Has earned consistently low grades over multiple quarters.
- Students receiving academic warning or probation must meet with their academic adviser to develop a plan for improvement.
- Academic standing may affect a student's eligibility to participate in any of Medill's off-campus programming.

## **Medill Integrity Code**

All Medill students are required to uphold the Medill Integrity Code, which, among others things, requires adherence to principles of honesty, fairness, and integrity in academic efforts and related professional media, journalism, and marketing communications work, whether students are in school, on an internship or a job, or acting as volunteers in a professional or academic activity.

## **Academic Options**

### **Dual Bachelor's Degree Programs**

Northwestern offers talented students the opportunity to earn in five years both a BSJ from Medill and a BMus degree from the Bienen School of Music. This dual bachelor's degree program prepares exceptional students for journalism careers emphasizing music and arts reporting. Prospective students typically apply to this joint program when they apply for undergraduate admission to Northwestern. For a detailed description of the dual-degree program, see the Dual Bachelor's Degrees (p. 38) page.

Northwestern also offers an opportunity to earn in five years both a BSJ from Medill and a degree from the School of Education and Social Policy to understand and demonstrate the principles and practices of journalism and media in the context of education and social policy. Students can learn more about this opportunity on the Dual Bachelor's Degrees (p. 38) page.

### **Integrated Marketing Communications Certificate Program**

The Integrated Marketing Communications Certificate Program focuses on effective marketing communications strategies, tactics, and tools for an increasingly customer-centric environment. It prepares students for entry-level marketing communications positions in such fields as advertising, public relations, corporate communications, and digital marketing. Students who receive the undergraduate IMC certificate and are admitted into the full-time MSIMC program within five years of their undergraduate graduation can complete the master's program in just four quarters, rather than the five quarters required for students without the certificate. See the Integrated Marketing Communications Certificate (p. 211) page and the Medill website for more information.

### **Bay Area Immersion Program**

At the Northwestern educational space based in downtown San Francisco and anchored by Medill and McCormick, students learn from and contribute to the Bay Area's entrepreneurial culture through a customized immersion experience. Students who apply and are accepted into the program take four courses that focus on experiential learning

in, and critical thinking about, areas such as design innovation, digital communication, and the intersection of technology and culture.

### **Medill Investigative Lab**

Through real-time, on-the-ground reporting in Chicago, Washington, D.C. and beyond, students in the Medill Investigative Lab probe power brokers and programs that promise to provide a safety net to tens of millions of vulnerable Americans. Through this high-profile program, students learn to think, research and write like an investigative reporter, publishing groundbreaking social justice stories from the ground up. Undergraduate and graduate students at Medill apply to take part in the lab and spend two terms—one in Evanston or Chicago and one in Washington, D.C.—working side-by-side with veteran journalists on an investigation of national importance.

### **Medill on the Hill Program**

A select group of Medill students may study for one quarter in Medill's Washington, DC, news bureau. These students take three intensive journalism electives worth four total units.

Medill on the Hill is an interdisciplinary program that exposes students to the challenging dynamics of Capitol Hill, public policy, political organizations, think tanks, and federal agencies. It is best suited to students interested in learning more about the political process and covering important national and global issues from the nation's capital in a rigorous, web-driven reporting environment.

### **Internships**

Internship employment may be available to Medill students, particularly during the summer. Many employers look to Medill for talented journalists who can be introduced to their organizations through internships. The school encourages these opportunities as a means of enriching students' education but gives academic credit only for Journalism Residency.

### **ROTC Course Credits**

ROTC course credits may be used as part of the 45 units required for graduation. They are considered elective courses.

### **Early Graduation**

Students who plan to graduate early must meet with an academic adviser at least three quarters before the expected date of graduation. These students also should check with the Office of the Registrar to make sure they have fulfilled the Undergraduate Registration Requirement (p. 27).

### **Academic Advising**

Each entering student is assigned an academic adviser in Medill Student Affairs and Academic Advising. They assist students with a variety of issues, including course planning, degree requirements, registration, study abroad, interschool transfers, petitions to graduate, and resources within and outside Medill.

### **Activities**

Through student publications, student broadcast media, and professional organizations, Medill students have many journalism-related opportunities outside the classroom.

Professional organizations that promote high standards among journalists maintain chapters on campus, including the Society of Professional Journalists, the Native American Journalists Association, the Asian American Student Journalists student group, the National Association of Black Journalists, the National Association of Hispanic

Journalists, and the National Lesbian and Gay Journalists Association. Top scholars in the senior and graduate classes are initiated into Kappa Tau Alpha, the national journalism honor society.

## Integrated Marketing Communications

[medill.northwestern.edu/imc](http://medill.northwestern.edu/imc)

The Integrated Marketing Communications Certificate Program focuses on effective marketing communications strategies and tactics for an increasingly digital media environment. It prepares students for entry-level marketing communications positions in such fields as advertising, public relations, corporate communications, and database and social media marketing.

Students develop skills for understanding and analyzing consumers in traditional markets and newly forming digital communities and social networks. They learn how to conduct research and analyze data on consumer behavior, media usage, and marketing communications outcomes. Students also learn about message creation and delivery through a wide variety of media channels.

The IMC Certificate Program invites applications from students in any undergraduate school at Northwestern. The application period will run from April 1-15 each year, and students may only apply during their sophomore year. As described on the Medill website, to be eligible to apply for admission, students must complete 3 prerequisite courses and earn a minimum cumulative GPA of 3.2 in them. Students must earn a cumulative GPA of 3.0 in the five IMC courses to achieve the certificate. Students who receive the undergraduate IMC certificate and are admitted into the MSIMC program can complete the master's program and graduate in just four quarters, rather than the five quarters required for students without the certificate.

## Program of Study

- Integrated Marketing Communications Certificate (p. 211)

**IMC 300-0 Introduction to Integrated Marketing Communications (1 Unit)** Basic introduction to the strategic marketing communications process, including consumer insight and research, market segmentation, brand positioning, communications messages, and media decisions. Overview of tactical areas, such as branding, advertising, digital media, and corporate communications. Course is for non-IMC certificate students only and does not count toward the certificate. Prerequisite: Sophomore standing.

**IMC 301-0 Consumer Insight (1 Unit)** Psychological, economic, communication, anthropological, and sociological perspectives on why and how individuals, families, and groups acquire, consume, and dispose of goods, services, ideas, brands, and experiences. Goals and experiences as means to understanding people as consumers. Prerequisite: Admission to IMC Certificate Program.

**IMC 302-0 Research and Data Analytics (1 Unit)** Covers analytic methods and metrics to develop, execute and evaluate marketing communications. Students learn how to design questionnaires and analyze survey results, and evaluate customer behavior by analyzing customer databases. Covers methods to evaluate media use including web analytics and social media metrics. Develops hands-on analytic skills with Qualtrics survey software and SPSS statistics software. Prerequisites: ECON 202, approved Statistics course.

**IMC 303-0 Integrated Marketing Communications Strategy (1 Unit)**

Consumer insight and research, market segmentation, brand positioning, communication messages, and media decisions. Brand communications integrated with other aspects of marketing, including product strategy, pricing, and retailing. Case studies and writing-intensive assignments. Prerequisites: IMC 301-0 and IMC 302-0.

**IMC 304-0 Digital Media Strategies (1 Unit)** Explores the contemporary media landscape and how brand communications adapt to media technology and usage. Uses current case studies to understand the transition from passive consumption of traditional media to active participation in digital and social media. Focuses on engaging consumers and other audiences and communicating effectively with them through media. Prerequisites: IMC 303, and admission to IMC Certificate Program.

**IMC 305-0 Analytics to Activation (1 Unit)** Analytics to Activation is a case study course taught by active industry leaders that will build upon the learning you gained in 301, 302 and 303. Instructors will further develop data collection techniques and analytic tools that will help you best define your target audience, evaluate your product or service offering, and optimize your brand activations to maximize return on investment. You will work individually and in teams on a variety of cases that require you to collect and interpret qualitative and quantitative data. Cases, podcasts, articles, and occasional guest speakers will introduce you to emerging technology platforms that can strengthen returns. Cases have been selected that demonstrate the technologies that drive marketing and communications in today's complex business environment. You will use the presentations and tools to create a data-driven brief to develop content that will minimize risk and maximize revenue and EBITDA growth of your efforts. You will present your work in every class and receive live feedback from your instructors just as if you are working at a client, an agency, or a consulting practice. Prerequisite: IMC 303-0.

**IMC 306-0 Strategic Communications (1 Unit)** Development and execution of communications strategies and relationship building with employees, the news media, government, investors, and the public. Outlets include traditional print and broadcast media and contemporary channels including blogs, social media platforms, and emerging technologies. Exercises in written communications. Prerequisite: Non-Medill students, IMC 303-0; Medill students, JOUR 301-0.

**IMC 307-0 Digital, Social and Mobile Marketing (1 Unit)** Focus on the tools, methodologies, and programs used by companies to develop, justify, deploy, and measure their social and mobile marketing programs. Development of complete social marketing programs for actual companies using best-of-breed social monitoring, web analysis, social marketing systems, blogs, Twitter, Google Plus, LinkedIn, and other tools. Prerequisite: IMC 303-0.

**IMC 308-0 Content Strategy (1 Unit)** Creating content that matters is mission critical for every brand. It's the pathway to deeper customer relationships. And from producing podcasts and full-length films, to building virtual worlds and AR experiences, to introducing AI influencers, brands have an endless, ever-evolving arsenal of tools at their disposal. But in a world where content is everywhere, breaking through is more challenging than ever. In this course, we'll get to the heart of how to create content that connects. It takes clear brand purpose, insightful audience understanding, brilliant strategy, and irresistible creative. And we'll dive into each through real-world examples, useful frameworks, and hands-on exercises. It's an energetic, highly collaborative environment that's ideal for all future marketers — especially those interested in brand strategy and storytelling.

**IMC 309-0 Social Networks (1 Unit)** Social networks have come to play an increasingly important role in the business world. This course

will introduce social network theory and analysis with an emphasis on applications to IMC processes. The goal of the course is to provide students with fundamental knowledge and skills to design and evaluate network-based IMC strategies. Students will apply social network theory and analysis through individual assignments and a final project.

**IMC 310-0 IMC Law, Ethics and Technology (1 Unit)** Provides students with the foundation to make better decisions and improve marketing communications by understanding legal and ethical issues and the policy side of communications, media and marketing. Covers media law, First Amendment protection of commercial speech, contracts, intellectual property, privacy and ethics. Prerequisites: IMC 303 and admission into the IMC certificate program .

**IMC 311-0 Data Governance (1 Unit)** Data Governance will address the rapid move of companies toward digital marketing and communications efforts, and the world of connected devices known as the Internet of Things. With the emphasis on data privacy and security, the class will explore critical legal and technology issues that create liability for marketing professionals and their companies. Prerequisite: Medill students JOUR 301-0; non-Medill IMC Certificate students IMC 303-0.

**IMC 312-0 Finance for Integrated Marketing Communications (1 Unit)** "This course provides an overview of the foundations of accounting as it relates to the use of costs from definitions, behaviors, contribution margin statements, and cost systems. Scenarios will be discussed and used in modeling for break-even, target profits, markup pricing and return on investment decision making. Using the ongoing debate of expenses versus investment, marketing costs will be expanded in the areas of budgeting, lifetime value and acquisition costs with the intention of building learning and action-based skills for each student to make impactful outcomes-based decisions that can be communicated with contextual story tell precision."

**IMC 390-0 Special Topics (1 Unit)** Specialized courses include Finance for Integrated Marketing Communications -Finance for IMC will focus on the familiarity and use of financial tools important to marketing executives in budget development and spending allocation; Technology and Innovation for Media-This course addresses the profound impact that evolving media strategies have on news, marketing communications and audience experiences. Prerequisite: Medill students JOUR 301-0; non-Medill IMC Certificate students IMC 303-0.

**IMC 399-0 Independent Study (1 Unit)** Prerequisite: IMC 303-0.

## Integrated Marketing Communications Certificate

Course	Title
<b>Certificate Requirements (8 units)</b>	
<i>3 prerequisite courses:</i>	
COMP_SCI 110-0 or COMP_SCI 111-0 or COMP_SCI 130-0 or STAT 201-0	Introduction to Computer Programming Fundamentals of Computer Programming Tools and Technology of the World-Wide Web Introduction to Programming for Data Science
One Statistics course (see website for approved courses) <sup>1</sup>	
One Microeconomics and Social Science course (see website for approved courses) <sup>1</sup>	
<i>3 core courses:</i>	
IMC 301-0 IMC 302-0 IMC 303-0	Consumer Insight Research and Data Analytics Integrated Marketing Communications Strategy
<i>2 electives from:</i> <sup>2</sup>	

IMC 304-0	Digital Media Strategies
IMC 305-0	Analytics to Activation
IMC 306-0	Strategic Communications
IMC 307-0	Digital, Social and Mobile Marketing
IMC 310-0	IMC Law, Ethics and Technology
IMC 311-0	Data Governance
IMC 312-0	Finance for Integrated Marketing Communications
IMC 390-0	Special Topics
IEMS 365-0	Analytics for Social Good (instructor permission needed)

<sup>1</sup> [medill.northwestern.edu/imc/undergraduate-imc-certificate/curriculum/index.html](http://medill.northwestern.edu/imc/undergraduate-imc-certificate/curriculum/index.html)

<sup>2</sup> Journalism students may petition to use JOUR 320-0 or JOUR 377-0 as IMC electives.

## Journalism

[medill.northwestern.edu/journalism/undergraduate-journalism](http://medill.northwestern.edu/journalism/undergraduate-journalism)

The Medill undergraduate journalism program offers students a variety of exclusive opportunities, including:

### Journalism Residency (Domestic and Global)

In the Journalism Residency program, students immerse themselves in a media outlet in Chicago, across the country or around the world.

They report, write and produce content on multiple media platforms for companies that range from news outlets to public relations and marketing companies. A faculty mentor will work with students to ensure their time in the program results in development of the student's career.

### Medill in San Francisco

At the intersection of media and technology lies the Bay Area Immersion Program, a groundbreaking, quarter-long program that gives you the opportunity to learn from and contribute to San Francisco's booming entrepreneurial scene. The program mixes journalism, engineering, design and innovation and includes students primarily from Medill and the McCormick School of Engineering.

### Medill Investigative Lab

Through real-time, on-the-ground reporting in Chicago, Washington, D.C. and beyond, students in the Medill Investigative Lab probe power brokers and programs that promise to provide a safety net to tens of millions of vulnerable Americans. Through this high-profile program, students learn to think, research and write like an investigative reporter, publishing groundbreaking social justice stories from the ground up.

### Medill on the Hill

Events in Washington, D.C., drive much of the nation's news, and the Medill on the Hill program offers select students the rare opportunity to cover Congress, the White House, federal policy and U.S. politics from our Washington newsroom.

Students uncover news and engage in real-time deadline reporting, updating their stories throughout the day using Twitter, Snapchat, Instagram and other social media tools before filing their final stories for the Medill on the Hill website. The most interesting and newsworthy stories are shared with Medill's professional media clients for publication in local newspapers, national outlets and trade publications throughout the country.

### Global opportunities

Medill offers students both quarter-long and short term opportunities to study and report from another part of the world. From weeklong trips to places like Israel, Panama or London, to quarter-long opportunities in places like Argentina, Medill students can report from across the globe.

## Program of Study

- Journalism Degree (p. 214)

**JOUR 190-BR Bridge Program (1 Unit)** This course will introduce you to the fundamentals of journalistic reporting and writing while simultaneously considering the role news plays in forming narratives around race and difference.

**JOUR 201-1 Fundamentals of Reporting & Writing News (1 Unit)** This course emphasizes the critical practices of ethical journalism and deadline reporting and writing and builds a strong foundation for all Medill classes. It introduces students to the essentials of accurate journalism regardless of platform or storytelling format.

**JOUR 201-2 Fundamentals of Video Journalism (1 Unit)** This course puts into practice the strong journalism concepts discussed in JOUR 202-0 and creates a base of fundamentals needed for effective, relevant and engaging storytelling for specific audiences using video as the centered platform.

**JOUR 202-0 Journalism Values, Practice & Trends (1 Unit)** This course focuses on the evolving relationship between today's news media landscape and its consumers. Students learn fundamental theories of human behavior and media consumption in order to understand new technologies, content opportunities, and relationship-building with journalism audiences.

**JOUR 291-0 Intro to Podcasting (1 Unit)** This class is designed for fans of narrative podcasts who have a lot of passion, but little to no practical experience in the audio form. You'll learn not only how to plan, record, edit, and mix audio, but also how to find and shape the kinds of stories that you love so much on This American Life, Serial, Radiolab, 99 Percent Invisible, and other narrative-based shows. Prerequisite: Medill sophomore standing.

**JOUR 292-0 Sports Marketing for Non-Majors (1 Unit)** Students will develop an understanding of marketing through the lens of sports and will consider the spectrum of sports marketing, from brands that use sports to capture the attention of customers to teams who want fans to buy season tickets. No journalism or marketing experience required.

**JOUR 301-0 Journalism in Practice (1 Unit)** Practice of reporting, editing, and storytelling skills through topical writing and research assignments. Learning to develop diverse sources and incorporate audio, visual, and multimedia elements for news, magazine, and other audiences. Readings, discussion, and experiential opportunities. Prerequisites: JOUR 201-1, JOUR 201-2 and Medill sophomore standing.

**JOUR 301-1 Journalism in Practice (0.5 Unit)** Practice of reporting, editing, and storytelling skills through topical writing and research assignments. Learning to develop diverse sources and incorporate audio, visual, and multimedia elements for news, magazine, and other audiences. By application. Prerequisites: JOUR 201-1, JOUR 201-2 and Medill sophomore standing.

**JOUR 302-0 Media History (1 Unit)** This course will explore how media history has influenced the world we live in today. Students will examine who has had the power and ability to tell the stories that shape people's lives, who has consumed those stories, who has been affected by the stories and whose stories have been neglected or distorted. Prerequisites: JOUR 201-1, JOUR 201-2 and Medill sophomore standing.

**JOUR 303-0 Framed: Media and the Marginalized (1 Unit)** Through discussion of principles of media professionalism and ethics, and an examination of some of the hot topics featured in today's headlines, this course will set a framework for recognizing and analyzing media narrative framing, as well as the representation of traditionally marginalized groups within that narrative frame. Ultimately, we will develop a deeper appreciation of media responsibility.

**JOUR 304-0 Global Journalism History (1 Unit)** This course expands the understanding of journalism beyond your own country's borders and experiences to examine the historical development, values and practices across regions throughout the world.

**JOUR 305-0 JOURneys (0.5 Unit)** Students will explore the worldwide media landscape with these short-term, faculty-led programs designed to provide a window into global media outlets and fascinating international news stories. Includes required course travel.

**JOUR 306-0 Audio Storytelling (1 Unit)** Learn how to gather sound, conduct interviews, script stories, and produce your final pieces. The class will focus on news spots, vox, and news features, but students will also get a brief introduction to podcasting and longer form audio work.

**JOUR 310-0 Media Presentation: Newspaper/Online (1 Unit)** This course teaches the essentials of editing content for newspaper and for the Web. Students will learn how to edit for grammar and Associated Press style; achieve accuracy, clarity and objectivity; think critically and exercise news judgment; write headlines and captions for print and online; edit photos and graphics; and design pages for newspapers. Prerequisite: Medill sophomore standing.

**JOUR 311-0 Editing & Producing: Magazine (1 Unit)** This course will help students develop the fundamental editing skills required of an entry-level magazine editor working on print, digital and mobile platforms. Prerequisite: Medill sophomore standing.

**JOUR 312-0 Editing & Producing: Video (1 Unit)** This key Medill class is designed to teach writing to video for television and web newscasts in preparation for your journalism residency placement. The fast-paced course will emphasize the conversational writing styles of broadcast and video productions while continuing to build the journalistic fundamentals of accurate and ethical reporting. Prerequisite: Medill sophomore standing.

**JOUR 319-0 Entrepreneurial Approaches to Media Innovation (1 Unit)** In this course, students will study different approaches to media-focused innovative business. Students will examine media products and services, analyze the choices that are being made by media companies, tech entrepreneurs, and investors; and observe how the general public learns about these businesses. By application. Prerequisite: Medill sophomore standing.

**JOUR 320-0 Storytelling: Interactive News (1 Unit)** This course explores how newsrooms are using technology in innovative ways to engage their audiences; and also examines how a digital news presentation evolves across various multimedia platforms. It builds on the foundations of audio, photo, and video storytelling and adds interactivity and engagement techniques – enabling students to design dynamic, creative digital narratives for news and feature reporting. Prerequisite: JOUR 301-0 or JOUR 301-1.

**JOUR 321-0 Storytelling: Magazine & Feature Writing (1 Unit)** This course introduces students to feature and magazine storytelling. Students will read and deconstruct an array of non-fiction stories and will report, write, re-write and edit short pieces and one long-form story. The course aims to inspire students to deliver memorable works of narrative, explanatory and service journalism, with particular emphasis

on expanding reporting methods and sharpening prose. Prerequisite: JOUR 301-0 or JOUR 301-1.

**JOUR 322-0 Storytelling: Video Reporting, Shooting, & Editing (1 Unit)** This is Medill's core video reporting and field-producing class. In weekly assignments, students will practice a variety of research, writing and field reporting techniques that will prepare them for the challenges of creating video in a professional newsroom or as a freelancer. Prerequisite: JOUR 301-0 or JOUR 301-1.

**JOUR 323-0 Reporting & Producing Social Media Video (1 Unit)** This class is about the things in your social media timelines that move and make noise—the news clips, explainers and engaging video stories that populate social media platforms. It's also about the trends, algorithms and business models behind those posts. We'll look at the top innovators of this genre and learn the best practices for social media video reporting. Prerequisite: Medill Sophomore Standing.

**JOUR 324-0 Advanced Feature Writing (1 Unit)** This course is designed to extend the lessons of foundational classes in narrative structure, immersion reporting, feature storytelling, and magazine writing.

**JOUR 325-0 Narrative Structure (1 Unit)** "Narrative Structure in Storytelling" is an immersive discussion-based course about the art of crafting stories for different media platforms with a pivot toward personal narrative creation in the second half of the quarter.

**JOUR 326-0 Advanced Photojournalism (1 Unit)** Advanced Photojournalism is recommended for students who are already familiar with DSLR cameras and have some experience using Lightroom/Photoshop. This class will review basic DSLR usage, how to use Lightroom, composition, photojournalism ethics, but will primarily be a production and editing course centered around the creation of a story-driven character-based photo story.

**JOUR 327-0 Social Justice Investigative Primer (1 Unit)** Over two quarters, students admitted to the Medill Investigative Lab will investigate one local, national or international issue, conduct interviews, probe critical data and trends and ultimately produce a groundbreaking investigative story from the ground up. Students will collaborate with each other, the instructor and potentially other professional investigative journalists to produce stories.

**JOUR 330-0 Reading and Reporting LGBTQ Health (1 Unit)** Students will learn how to explore, navigate and report on public health in the City of Chicago by reading LGBTQ+ news media and learning queer and trans writing methods. Students will also learn how to critically read media coverage of LGBTQ+ people.

**JOUR 331-0 Sex and the American Empire (1 Unit)** This course will be an intensive study in understanding the relationship between American journalism and the U.S. military in creating an American empire. By focusing on how the U.S. military has segregated service members by race, sexuality, gender and gender identity—and on how U.S. media has covered the military—students will study how identity roles have been formed by both the military and the media in American society.

**JOUR 332-0 Coverage of Gender and Sexual Minorities (1 Unit)** Examination of social science research on LGBT communities and translating it for specialized and general audiences. Topics include research aims and limitations; reporting on underrepresented groups; finding fresh angles and credible sources; contextualizing stories of local, national, and international reach. Prerequisite: Sophomore standing.

**JOUR 333-0 Bilingual Reporting (1 Unit)** This is a bilingual course that explores the history, current state and future of the English, Spanish and bilingual audiences and the media outlets that seek to reach them. Students will get to know Chicago's vibrant and diverse LatinX

communities and practice research and interviewing, reflection and story production in Spanish and in English. Spanish proficiency required. Prerequisite: Medill sophomore standing.

**JOUR 342-1 Knight Lab: Studio (1 Unit)** Each quarter, multidisciplinary teams of students, faculty, and professionals come together to collaborate in the Knight Lab Studio to produce cutting-edge digital work, research, and thought, innovating across every part of the media-making process. By application. Prerequisite: Medill Sophomore Standing.

**JOUR 342-2 Knight Lab: Artificial Intelligence in Media (1 Unit)** A mix of media- and computer science-focused students will explore innovative artificial intelligence ideas and solutions related to the creation, consumption and distribution of journalism.

**JOUR 345-SA Journalism Residency: Argentina (2 Units)** By application only.

**JOUR 346-SA Journalism Residency: Argentina (2 Units)** By application only.

**JOUR 347-0 Journalism Residency (1-2 Units)** By application only.

**JOUR 348-0 Journalism Residency (2 Units)** By application only.

**JOUR 352-0 Politics, Media and The Republic (1 Unit)** This seminar will explore such themes as polarization, political image-making and advertising, voting rights and voter suppression, as well as campaign rhetoric and policy issues. Prerequisite: Medill sophomore standing.

**JOUR 353-0 Dilemmas of American Power (1 Unit)** This course uses an engaging set of case studies and materials to chart one of the most intriguing stretches of international engagement in U.S. history. Students will work collaboratively to understand why decisions were made, how policies were implemented and sold, and what it all may mean in the end. Prerequisite: Medill sophomore standing.

**JOUR 357-0 Sports Commentary (1 Unit)** Students will develop a distinctive voice that stands out from the cacophony of opinions in the sporting world, to create commentary that is informative, thought-provoking and entertaining and to adapt those messages for delivery across multiple media platforms. Students will learn to coalesce their observations, opinions and experiences into compelling arguments. Prerequisite: Medill junior standing.

**JOUR 358-0 Evolution of Sports Media (1 Unit)** From the foundational elements in the days of typewriters and telegraphs that are still in use today to the technological innovations that will shape the way we watch sports in the future, Sports Media History examines the evolution of this multibillion-dollar field.

**JOUR 359-0 Media History and the Native American Experience (1 Unit)** In this media history class, we will generate multimedia content for an "Indigenous Tour of Northwestern." Students will research Native American people, places, policies, and historic social movements that intersect with locations on the Northwestern campus.

**JOUR 360-0 Intro to Sports Writing (1 Unit)** This course is a dive into the world of sports journalism and how sports reporters do their jobs on a daily basis, utilizing all the fundamentals of good journalism while recognizing that it is also a unique endeavor.

**JOUR 365-SA Journalism Residency: South Africa (2 Units)** By application only.

**JOUR 366-SA Journalism Residency: South Africa (2 Units)** By application only.

**JOUR 367-0 Native American Environmental Issues and the Media (1 Unit)** This course introduces students to indigenous issues, such as treaty-based hunting, fishing, and gathering rights; air and water quality

issues; mining; land-to-trust issues; and sacred sites. We will focus on how the media cover these issues and how that coverage contributes to the formation of public opinion and public policy. Prerequisite: Medill sophomore standing.

**JOUR 368-0 Documentary (1 Unit)** This course will provide students with a comprehensive overview of HD video production specifically geared towards producing short documentaries that tell human stories. Emphasis is put on the use of character, conflict, drama and surprise in telling these documentary stories. Students will learn documentary production with a journalism focus: reporting, camera technique, lighting and sound recording in the field. Prerequisite: JOUR 301-0 or JOUR 301-1.

**JOUR 370-0 Media Law & Ethics (1 Unit)** This course will acquaint you with the ethical and legal principles that govern journalism and all communications media, and provide an opportunity to come to grips with those principles, using reasoning, analysis, critical thinking, and precise expression. Prerequisites: Medill sophomore standing.

**JOUR 371-0 Journalism of Empathy (1 Unit)** Exploration of writing and reporting about people and places neglected and misunderstood by mainstream America. Prerequisite: JOUR 301-0 or JOUR 301-1.

**JOUR 372-0 International Journalism: South Africa (1 Unit)** This course covers contemporary history in South Africa with a special focus on the role of media. It provides an opportunity to hear from African journalists working in one of the world's newest democracies and to compare and contrast their experience with the increasingly contested role of reporters in the U.S., the world's oldest constitutional republic. Required for South Africa Journalism Residency. Prerequisites: JOUR 301-0 or JOUR 301-1.

**JOUR 373-0 Medill Investigative Lab (2 Units)** In this dynamic course grounded in real-time investigative reporting, students will expose a problem of significant national or international importance and chronicle its effects on the lives and livelihoods of those most impacted, particularly those in disenfranchised communities. Prerequisite: Medill junior standing and instructor consent.

**JOUR 374-0 Techniques of Investigative Journalism (1 Unit)** In this course, you'll examine the issues, ethics and challenges of investigative journalism while you partner with a working journalist to learn how to use reporting tools that will strengthen any type of story you pursue, as well as prepare you to take advanced investigative reporting courses if you choose. Prerequisite: JOUR 301-0.

**JOUR 376-0 Media Design (1 Unit)** In this course students will be introduced to creating and developing a visual response to communication problems, including understanding of hierarchy, typography, aesthetics, composition and the construction of meaningful images. Prerequisite: Medill sophomore standing and JOUR 301-0 or JOUR 301-1.

**JOUR 377-0 Introduction to Data Journalism (1 Unit)** The course will introduce students to the basics of data journalism in a busy newsroom, showcasing the importance of telling a story and how tools can help you do it. The emphasis of this course is on practical skills and the latest developments in data journalism: working with designers, using free charting tools, sourcing and mapping data.

**JOUR 378-0 Introduction to Photojournalism (1 Unit)** This class will provide students with an introduction to digital photography with an emphasis on photojournalism. Emphasis will be put on using images to portray human stories – ones that surprise, break stereotypes, and capture emotion in dramatic and intimate situations. This class will also focus on basic picture editing and how proper picture selection enhances the total journalistic package. Prerequisite: Medill sophomore standing.

**JOUR 383-0 Health and Science Reporting (1 Unit)** In this combination writing workshop and seminar, students will read some of the best science and health journalism; meet with expert scientists on campus; and meet the editors and writers from leading scientific journals and publications. Students will learn what makes good science writing, how to find sources, how to evaluate information and how to sort out science from pseudo-science. Prerequisite: Medill sophomore standing.

**JOUR 384-0 Covering Washington, D.C. as a Mobile Journalist (2 Units)** This class will give students hands-on experience covering the nation's capital as a mobile journalist on a beat, producing up-to-the-minute political stories for the Medill on the Hill website. The primary focus of the course, instant newsgathering and multi-media reporting, will enhance innovative story-telling and deadline skills. Prerequisite: By application only.

**JOUR 388-0 Internship (0 Unit)** Student-initiated internships in journalism. Supervised by Medill Career Services. Prerequisites: Sophomore standing and consent of Medill Career Services.

**JOUR 390-0 Special Topics (1 Unit)** Specialized experimental courses offered from time to time by faculty. Topics may include journalism in a networked world and depth reporting using documents and databases. Prerequisites: Vary depending on the course.

**JOUR 399-0 Undergraduate Independent Study (0.5-1 Unit)** Academic work sponsored and supervised by a faculty member working one-on-one with the student. By application.

**JOUR 399-3 Experiential Learning (0 Unit)** Journalism Travel Program. By application Only.

## Journalism Degree

### Bachelor of Science in Journalism Degree (45 units)

All Medill students pursue a major in journalism.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

#### Arts and Sciences Requirements (17 units)

##### Foundational Discipline Requirements (12 units)

- 2 units in the social and behavioral sciences
- 2 units in historical studies
- 1 unit in philosophy or religious studies
- 2 units in literature and arts
- 1 unit in economics or business understanding
- 4 units in natural sciences or empirical and deductive reasoning; at least 1 must be in empirical and deductive reasoning

##### Weinberg College Elective Concentration (5 units)

- 5 courses in any one Weinberg College department
  - 1 unit may be at the 100 level
  - 2 units must be at the 300 level
  - Only 1 unit of field study or independent study credit may count toward the concentration
  - AP credits do not count toward the concentration
- A minor, a second major, or an adjunct major in Weinberg College may count toward the Weinberg College elective concentration.

## Non-Medill Elective Requirement (10-14 units)

- 10 to 14 non-Medill credits to explore or extend interests
- At least 3 must be in Weinberg College

## Language Requirement

- 3 units in a language other than English, demonstrated proficiency as defined by Weinberg College, or articulated credit from an AP/IB exam in a language other than English

## Diverse Cultures and Social Inequalities Requirement (2 units)

- 2 courses from a Medill-approved list

## Major Requirements (14-18 units)

Course	Title
<i>Core Courses (8 units)</i>	
JOUR 201-1	Fundamentals of Reporting & Writing News
JOUR 201-2	Fundamentals of Video Journalism
JOUR 202-0	Journalism Values, Practice & Trends
JOUR 301-0	Journalism in Practice
JOUR 370-0	Media Law & Ethics (required before Journalism Residency)
A history, representation, or business understanding course	
Two 300-level Advanced Journalism in Practice courses	
<i>Journalism Residency or Professional Experience (4 units)<sup>1</sup></i>	
JOUR 347-0	Journalism Residency
& JOUR 348-0	and Journalism Residency
or JOUR 345-SA	Journalism Residency: Argentina
& JOUR 346-SA	and Journalism Residency: Argentina
<i>Electives (2–6 units)</i>	
Students must take at least two journalism electives.	

<sup>1</sup> Students may complete this requirement with a preapproved noncredit professional experience. Requirements for the professional experience/internship option include 4 courses, 3 of which must be 300-level journalism courses.

# JUDD A. AND MARJORIE WEINBERG COLLEGE OF ARTS AND SCIENCES

[weinberg.northwestern.edu](http://weinberg.northwestern.edu)

The Judd A. and Marjorie Weinberg College of Arts and Sciences—oldest of Northwestern's 12 schools—has been the center of the University's academic and intellectual life since the 1850s. Weinberg College offers a liberal arts education that combines broad exposure to the insights and methods of multiple academic disciplines with focused study in one or more areas. The Weinberg College faculty is dedicated to superior teaching informed by advanced research. Nearly all members of the faculty, including the most senior, regularly teach undergraduates in a curriculum that includes seminars, lectures, supervised laboratory experiences, field studies, and other forms of instruction. Undergraduate students in arts and sciences enjoy a great deal of choice, with access to departments and programs offering majors, adjunct majors, and minors. Among these are several majors and minors that are interdisciplinary within the College or represent curricular collaboration across schools.

The Weinberg College degree requirements are guided by a set of overarching imperatives that students develop in their undergraduate studies and continuously throughout their lives - observe, critique, reflect, and express (<https://weinberg.northwestern.edu/undergraduate/documents/ocre-learning-goals-handout-for-students.pdf>). Rather than representing distinct skills or competencies that can be clearly delineated from each other, we view this set of four imperatives as characterizing the active process of understanding, or intellect, that Weinberg students develop in their courses as well as in their extra- and co-curricular activities. The result is an interdisciplinary degree that prepares students for success in a complex world. Beginning in 2023 new students will achieve these College goals through the fulfillment of a set of degree requirements that are themselves driven by learning goals established by the Weinberg College faculty. Distinct as they are, these requirements are interconnected.

Students complete a *major* by the time they graduate; intensive coursework in a major develops an understanding of advanced concepts and lays the groundwork for original research. Deep study of one subject leads to mastery of the College learning goals in the context of a particular academic discipline. But in addition to their major, Weinberg students do much more.

All incoming first-year students take a *College seminar* in the fall. The College seminar is where most students create their first Northwestern community as they acclimate to Northwestern together and develop the academic and life skills that will help them thrive for the next four years. In College seminars, the goals of observation, critique, reflection, and expression are introduced.

All students will demonstrate at least an intermediate *proficiency in a language other than English*, enhancing their ability to communicate, as well as experience another culture through its language. As students gain proficiency in a language other than English, they will hone skills of reflection and expression.

Students take courses across six *foundational disciplines* that span the entire Weinberg curriculum. In doing so they look through a multitude of disciplinary and interdisciplinary lenses and acquire breadth in the

arts and sciences. Foundational disciplines support the College learning goals, with the emphasis varying across the individual disciplines.

By taking two courses in *perspectives on power, justice, and equity* (one from a U.S. perspective, one a global perspective) Weinberg students observe and critique structures and histories that have created inequities and injustices and reflect on their own position in these structures and histories.

Through a two-part requirement in *written and oral expression*, students advance their analytical and critical skills, as well as their ability to express themselves in (for example) a well-crafted written argument, an oral presentation, or in an artistic medium. In *first-year writing seminars*, students improve skills in critique and expression. As students fulfill *advanced expression*, they master goals of expression.

Beyond the degree requirements, a period of study abroad is encouraged in order to develop firsthand knowledge of other cultures and greater intellectual and personal independence. Students are also encouraged to undertake independent research projects that help them move beyond coursework and synthesize what they learn in their majors. Undergraduate research opportunities abound for Weinberg students, as well as robust funding, especially for summer research projects. Students can experience the excitement of discovery in the sciences, humanities, and social sciences through special projects developed under faculty guidance or by assisting faculty in their research. Northwestern's strong undergraduate preprofessional schools and its graduate and professional schools offer liberal arts students enhanced opportunities to extend their interdisciplinary studies and pursue applied work in several areas. In some cases this may lead to a minor or a certificate. The University's outstanding libraries and its research centers further support and enrich the educational pursuits of liberal arts undergraduates.

Our data show that Weinberg College graduates are equipped to launch careers and explore options in a rapidly changing work environment that values the critical thinking skills, communication skills, intellectual nimbleness, and ability to think empathically that they have cultivated throughout their studies in the Weinberg College of Arts and Sciences.

## Requirements for the Degree of Bachelor of Arts

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Weinberg College offers courses of study in the arts and sciences leading to the degree of bachelor of arts. Students have extensive flexibility in structuring their academic programs within a framework of general education and major requirements specified in this catalog, which collectively support the learning goals for the degree: observe, critique, reflect, and express (<https://weinberg.northwestern.edu/undergraduate/documents/ocre-learning-goals-handout-for-students.pdf>). Curriculum planning guidance is available from several sources; see Academic Advising (p. 222).

### To earn the bachelor of arts degree, students:

- Complete a College seminar (p. 217) in fall quarter of the first year
- Satisfy the two-course requirement in written and oral expression (p. 217) by completing a first-year writing seminar, and later, a course meeting the advanced expression requirement

- Demonstrate proficiency in a language (p. 217) other than English
- Satisfy foundational disciplines (p. 217) via two units of course credit in each of six intellectual areas, for a total of 12 units
- Complete two courses addressing *perspectives on power, justice, and equity*, one focused on the U.S. and one with a global focus
- Complete the requirements of a Weinberg College major (p. 218)
- Meet or exceed the College- and the University-specified numbers and types of credits and quarters (p. 218)
- Meet or exceed grade requirements (p. 219)

Completion of these requirements ensures that students acquire important skills and gain breadth of knowledge spanning multiple disciplines, while also acquiring depth of understanding through intensive study within one area. Students may determine whether a course fits a certain requirement or requirements based on text in this Catalog, lists of approved courses on the Weinberg College website describing these requirements, and notations in the quarterly class listings on CAESAR and other Registrar's Office documentation. Weinberg College departments and programs frequently include supplemental information about courses applicable to majors and minors on their webpages.

## College Seminar

Students take a College seminar in the fall quarter of their first year. In these small, discussion-oriented classes offered by many departments and programs, students explore a single topic or theme while also reflecting on the college environment and enhancing skills such as spoken and written communication, time management, and help-seeking that are necessary to thriving at Northwestern. College seminar instructors also serve as their students' first advisers in the College.

These seminars ordinarily supplement rather than replace standard introductory courses and usually do not provide the preparation necessary for advanced work in a field; most departments and programs exclude them from counting towards major or minor requirements.

Students admitted to the Kaplan Humanities Scholars Program (p. 344) take a seminar linked to a second course aligned with one of the foundational disciplines; students admitted into the Mathematical Methods in the Social Sciences (p. 360) program complete the College seminar requirement as part of their first year MMSS coursework.

See also Policies (p. 219) and Grade Requirements (p. 219) pertaining to College seminars.

## Written and Oral Expression

All Weinberg College students must take courses designed to improve their ability to articulate their ideas in oral, written, visual, digital, and other media. In these courses (two units, one designated first-year writing seminar, and one course satisfying the advanced expression requirement) students assemble narratives, explanations, data, and arguments that navigate carefully ordered evidence. In addition to the information below, see also Policies (p. 219) and Grade Requirements (p. 219) pertaining to the written and oral expression requirement.

### First-Year Writing Seminar

Students are introduced to the basics of expression by completing a **first-year writing seminar** in winter or spring of their first year. These build on the base established by the College seminar, and special attention is paid to the process of writing and revision. These writing seminars ordinarily supplement rather than replace standard introductory courses and usually do not provide the preparation necessary for advanced work

in a field; most departments and programs exclude them from counting towards major or minor requirements.

## Advanced Expression

Higher-level proficiency in written and oral expression is demonstrated through completion of the **advanced expression** requirement. Courses meeting the learning objectives of the advanced expression requirement provide students with an opportunity to enhance their skills and to demonstrate high-level achievement in their ability to articulate their ideas and convey arguments through carefully ordered evidence. Courses are typically at the 300-level and taken after the first year. Some allow students to demonstrate their skill via work in a language other than English. Many departments and programs have course options available within a major, but students may also meet the advanced expression requirement with a course outside of their major. More information and a list of courses can be found in this catalog under Advanced Expression (p. 225).

## Proficiency in a Language other than English

Weinberg College students must demonstrate proficiency in a language other than English at a level equivalent to two years of college-level language instruction (or higher). Proficiency includes the ability to make oneself understood in a language and in turn, understand others; knowledge and understanding of the history and culture of the community or communities in which that language is the primary means of communication; and the ability to function in culturally-appropriate ways within a community or communities using that language.

### Ways to demonstrate language proficiency:

- Successful completion of designated Northwestern coursework (see also Policies (p. 219) and Grade Requirements (p. 219) pertaining to courses used to demonstrate proficiency)
- Submitting a designated score on a College Board Advanced Placement Examination
- Passing a regularly-scheduled Northwestern-administered placement examination (schedule varies, and departments may limit the number of times a placement examination may be taken; consult the relevant department for details)
- Providing required documentation that secondary schooling was completed in a language other than English
- Students who believe they are proficient in a language not regularly taught at Northwestern may petition to arrange a special placement examination in that language.

Additional details can be found on the Weinberg College website under Proficiency in a Language Other Than English (<https://weinberg.northwestern.edu/undergraduate/degree/post-spring-2023-degree/language-proficiency/>). Students with professionally-diagnosed disabilities related to language acquisition should contact AccessibleNU (<https://www.northwestern.edu/accessiblenu/>) about possible accommodations.

## Foundational Disciplines

To ensure breadth of education and achieve learning objectives that support the BA learning goals, Weinberg College students must complete two academic units of credit representing each of the six foundational disciplines listed below, for a total of 12 foundational discipline course units. Each category is normally completed by taking two distinct Northwestern courses that have been formally approved by faculty governance process as supporting the area learning objectives. If a single Northwestern course approved for a foundational discipline is worth more than one unit of credit, only one of those units may be

directed to the foundational discipline area. Non-Northwestern credits are generally not applicable towards foundational disciplines, but see Policies (p. 219) for exceptions and additional rules. See also Grade Requirements (p. 219) pertaining to foundational disciplines.

### **Natural Sciences (FD-NS)**

Courses in this foundational discipline convey our current understanding of the natural world and the methods by which this understanding is achieved through systematic hypothesis testing. Students learn to appreciate the evidence of our current understanding of nature; the scientific process; and the implications, utility, and limitations of scientific inquiry. A more complete description with learning objectives and list of courses, can be found under Natural Sciences (<https://catalogs.northwestern.edu/undergraduate/arts-sciences/natural-sciences/>).

### **Empirical and Deductive Reasoning (FD-EDR)**

We learn about the world in two main ways: empirically, from observations, and by making logical deductions from what we already know or conjecture. Courses in this foundational discipline teach students to use these two modes of inference and to recognize both their power and their limitations. A more complete description with learning objectives and list of courses, can be found under Empirical and Deductive Reasoning (p. 291).

### **Social and Behavioral Sciences (FD-SBS)**

Social scientists use qualitative and quantitative methodologies to help us understand how we influence, and are influenced by, societal forces. Courses in this foundational discipline teach students about theories, methodological approaches, and empirical research findings pertaining to human experience, from the level of the individual to that of familial, cultural, political, and institutional structures. A more complete description with learning objectives and list of courses, can be found under Social and Behavioral Sciences (p. 427).

### **Historical Studies (FD-HS)**

Courses in this foundational discipline examine change over time in a wide variety of spheres, including beliefs, cultures, economics, intellectual thought, politics, and society. Students learn critical methods including: evaluation of evidence, understanding conditions under which historical actors operated, comprehending cause and consequence, tracing patterns, comparative analysis of sources, and historical argumentation. A more complete description with learning objectives and list of courses, can be found under Historical Studies (p. 329).

### **Ethical and Evaluative Thinking (FD-EET)**

All human cultures have produced systems of thought and belief concerning ways of being in the world and relating to one another. Courses in this foundational discipline help students recognize and reflect on ethical and evaluative questions, become aware of what standards they bring to bear in answering them, appreciate and respect their own and other cultural systems, and work through disagreements with others. A more complete description with learning objectives and list of courses, can be found under Ethical and Evaluative Thinking (p. 305).

### **Literature and Arts (FD-LA)**

Through courses in this foundational discipline, students come to understand and appreciate a range of artistic forms and media. They learn to describe, value, and critique artistic works; to identify and query the ideas and perspectives they represent; and to consider them as practices through which human beings have attempted to explore and transform their worlds. Students also develop essential skills in critical thinking and cultural analysis. A more complete description with learning

objectives and list of courses, can be found under Literature and Arts (<https://catalogs.northwestern.edu/undergraduate/arts-sciences/literature-arts/>).

### **Perspectives on Power, Justice, and Equity**

This two-part (2 unit) transdisciplinary requirement is designed to infuse the Weinberg College curriculum with active discussions about how to navigate the local-global continuum amidst the complex and highly dynamic social and political movements of today and in the past. Students take one each from U.S. Perspectives and Global Perspectives categories. These courses ask students to reflect on their own perspectives as necessarily the product of interconnected webs of people, ideas, and events. Non-Northwestern courses are generally not applicable towards this requirement, but see Policies (p. 219) for exceptions and additional rules. See also Grade Requirements (p. 219) pertaining to the perspectives requirement. A more complete description, with learning objectives and lists of courses, can be found in this catalog under Perspectives on Power, Justice, and Equity (p. 385).

### **Major Study Requirement**

All students must fulfill the requirements of a Weinberg College major, which should be declared by the end of sophomore year. Requirements for majors are described in detail in the department and program sections of this catalog. Completion of an adjunct major (see Options & Support (p. 222)) does not satisfy the major study requirement, but adjunct majors, designed to be completed alongside a regular major, are otherwise governed by the same policies that pertain to other College majors. See Policies (p. 219) and Grade Requirements (p. 219) pertaining to College majors.

Most majors are declared by meeting with a designated department or program adviser to discuss opportunities and requirements, develop a course plan, and complete a Declaration of Major Form. Limited-admission majors require a special application; these include American studies, creative writing, integrated science, legal studies, and the adjunct major mathematical methods in the social sciences.

Occasionally Weinberg College students with well-defined interests are led to programs of study that do not fit neatly into a traditional major. They may develop a proposal for an *ad hoc* major that brings together courses from various Weinberg College departments and programs. Ad hoc majors must be approved by the Weinberg College Curricular Review Committee. For more information contact the Office of Undergraduate Studies and Advising.

### **Units of Credit and Quarters of Enrollment**

University and College policies specify that students spend a certain number of quarters at Northwestern and identify the total amount and type of credit needed to graduate.

### **Undergraduate Registration Requirement**

All Northwestern undergraduates are subject to the university's Undergraduate Registration Requirement (p. 27) (URR). This requirement specifies how many quarters must be spent at Northwestern and how many units of credit must be earned at Northwestern in order to graduate with a Northwestern degree.

### **Weinberg College Credit and Quarter Requirements**

Students must earn at least **45 units of credit** in order to graduate with a Weinberg College BA. Almost all courses taught at Northwestern are worth one unit; those worth more or less than one unit also contribute to the total required units. Special credit rules apply to the Integrated Science Program (p. 345) and the dual bachelor's degree programs

BA/BMus in liberal arts and music (p. 38) and BA/BS in liberal arts and engineering (p. 38).

- Of the 45 units, no more than 6 may be internship-linked credit. See the Weinberg College website for more information about internships for credit (<https://weinberg.northwestern.edu/undergraduate/enrichment-opportunities/internships-and-volunteering/internships-for-credit.html>).
- Of the 45 units, no more than 9 may be independent study (typically listed using the course number 399) or advanced undergraduate seminar credits (typically listed using the course number 398). Certain independent study courses offered by some departments with course numbers different from 398 and 399 are also subject to this restriction. University policy is that students may register for no more than two units of independent study in one quarter (see Undergraduate Research (p. 43)).
- Weinberg College students may take advantage of courses offered by Northwestern's other schools, but a minimum of 34 units must be earned in Weinberg College disciplines. These include the following:
  - Units of credit earned in Weinberg College academic areas of study, inclusive of all courses offered by the College as well as courses listed under the COMP\_SCI and MAT\_SCI subject codes.
  - Units of credit transferred from other institutions or granted based on test scores in academic disciplines represented by Weinberg College academic areas of study. Transfer or test credits will count towards the 34 units if they appear on the Northwestern transcript with a designation corresponding to a Weinberg College area or as general credit (GEN\_CRED).
  - Approved School of Professional Studies courses in Weinberg College disciplines. Note that students must obtain the advance permission of the Office of Undergraduate Studies and Advising to register for courses in the School of Professional Studies.
- Additional units beyond 34 can be in disciplines taught at Northwestern in schools other than Weinberg College. These count towards the required 45 units for the degree, subject to certain limitations.
  - No more than 3 units may be instruction in applied music (see list under Bienen School of Music policies (p. 51)).
  - No more than 4 units may come from the military studies programs.
  - Certain School of Professional Studies (SPS) courses are not eligible to count towards College degree requirements. Students must consult their College Adviser if they are considering SPS courses. See also Enrollment (p. 23) in this Catalog.

Students must be degree candidates in Weinberg College for the last three quarters before receiving the BA degree. Students who start their Northwestern studies in one of the other undergraduate schools, but plan to graduate with a Weinberg College BA need to complete the inter-school transfer (see Student Status (p. 25)) in time. Students who complete a late inter-school transfer may request a waiver.

## Grade Requirements

Students must achieve an overall grade point average of C (2.0) or higher in courses used to meet degree requirements. Full-time students in Weinberg College are permitted to enroll in a limited number of courses with the understanding that in place of a regular letter grade they will receive the notation P (pass) or N (no credit), neither of which counts in the grade point average. No more than 1 course a quarter and 6 courses in all may be taken under this P/N option. No more than one-fifth of the

total courses taken at Northwestern and offered for graduation may have grades of P or D.

### Courses passed with grades of P or D are not always eligible to be applied to specific requirements. Restrictions include the following:

- College seminars (p. 217) cannot be taken under the P/N option.
- Written and oral expression (p. 217) courses must be passed with a grade of D or higher. Courses completed with a P (pass) cannot be counted.
- Language proficiency (p. 217) may be demonstrated through Northwestern coursework by earning at least a C- in the third quarter of the second-year language sequence, or in a higher-level course where instruction is in a language other than English. Courses completed with a P (pass) cannot be counted.
- Foundational discipline (p. 217) requirements are satisfied with two course credits in each of six discipline areas; up to two qualifying courses completed with a P (pass) may be directed to the foundational disciplines as long as the courses are applied in different foundational areas. At least one course in each foundational area must be completed with a regular Northwestern letter grade of D or higher posted to the student's Northwestern transcript.
- The two-part Perspectives in Power, Justice, and Equity (p. 218) requirement must be satisfied with courses passed with a grade of D or higher. Courses completed with a P (pass) cannot be counted.
- Students must earn at least a C- in all major (p. 218) courses, as well as courses used to satisfy requirements for an optional **adjunct major or minor** (see Options and Support (p. 222)), including all related courses for a major or adjunct major. If a major, adjunct major, or minor has prerequisites, students must earn at least a C- in these courses as well. Courses completed with a P (pass) cannot be counted toward a major or minor. Students who decide to declare a major in a field but already completed one course for a grade of P (pass) should consult an adviser in that major as soon as possible.

While some other undergraduate schools of the University offer a Target Grade-P/N registration option, such registration is not available for courses offered by Weinberg College. Special rules govern registrations by Weinberg College students in courses of the undergraduate schools where this plan is available as well as by non-Weinberg College students who transfer into the college. Questions concerning this policy should be addressed to the Office of Undergraduate Studies and Advising.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Weinberg College Policies

Detailed policies & procedures are available on the Weinberg College website under Policies, Procedures, and Forms (<https://weinberg.northwestern.edu/undergraduate/advising/policies-forms/>). Some policies related to degree requirements can be found in this Catalog under Requirements (p. 216), and additional information can be found under Academic Options and Support (p. 222).

## Multiple Majors and Minors

Students may pursue two or more majors or minors by completing the requirements for each; generally, a student may not count any course

towards more than one major or minor, but see Counting Courses Toward More than One Requirement (p. 220) for exceptions.

A student's total number of majors plus minors may not typically exceed three. Exceptions require permission from the Weinberg College Advising Office and cannot be granted during the first year.

## Counting Courses Toward More than One Requirement

A single course at Northwestern may fit more than one requirement. A course being applied towards the major requirement (or towards an optional second major or a minor) may at the same time be directed towards satisfying another Weinberg College degree requirement if it is eligible, but there are limitations on double-counting between majors, between majors and minors, between minors, and between other degree requirement categories.

### See below for a list of restrictions.

- A course applied to the **College seminar** requirement...
  - cannot be double-counted towards the *written and oral expression* requirement, a *foundational discipline* requirement area, *proficiency in a language other than English*, or *perspectives on power, justice, and equity*.
- A course applied to the **first-year writing seminar** component of the *written and oral expression* requirement...
  - cannot be double-counted towards the *College seminar* requirement, the *advanced expression* component of the *written and oral expression* requirement, a *foundational discipline* requirement area, *proficiency in a language other than English*, or *perspectives on power, justice, and equity*.
- A course applied to the **advanced expression** component of the *written and oral expression* requirement...
  - cannot be double-counted towards the *College seminar* requirement or the *first-year writing seminar* component of the *written and oral expression* requirement, but otherwise *can simultaneously count towards another requirement or requirements for which it is approved*.
- A course in language instruction at the introductory (first-year) or intermediate (second-year) level...
  - cannot be counted towards the *College seminar*, *written and oral expression*, *foundational disciplines*, or *perspectives on power, justice, and equity* requirements. Sufficient performance (see Grade Requirements (p. 219)) in a final course of an intermediate (second-year) sequence counts as demonstrating *language proficiency*.
- A course taught in a language other than English beyond second-year level...
  - cannot be used to fulfill a *College seminar* or *first-year writing seminar*, but it can be used to demonstrate *language proficiency* (see Grade Requirements (p. 219)) while *also* counting towards another requirement or requirements for which it is approved.
- A course applied to one of the **foundational disciplines**...
  - cannot be double-counted in a second *foundational discipline* area, even if it is eligible in two foundational areas. If it is eligible in two areas, students can choose in which one area to count it.
  - cannot be double-counted towards the *College seminar* requirement or the *first-year writing seminar* component of the *written and oral expression* requirement.
  - cannot be taken under the P/N grading option if it is to double-count for a degree requirement that requires a letter grade of D, C-, or higher.

- A course applied to **U.S. or global perspectives on power, justice, and equity**...
  - cannot be double-counted to both *U.S.* and *global* perspectives at the same time.
  - cannot be directed to the *College seminar* or the *first-year writing seminar* component of the *written and oral expression* requirements, but otherwise *can simultaneously count towards another requirement or requirements for which it is approved*.
- A course that is being applied towards a Weinberg College **major** (or adjunct major)...
  - cannot be double-counted with an additional major (or adjunct major) unless designated as a related course requirement for one or both majors, designated a prerequisite/basic course requirement for one or both majors, or there is otherwise a special rule allowing a limited number of courses to double-count.
  - cannot be double-counted with a minor unless designated as a related course requirement for that major, designated a prerequisite/basic course requirement for the major or a prerequisite for the minor, or there is otherwise a special rule.
- A course that is being applied towards a Weinberg College **minor**...
  - cannot be double-counted with an additional minor unless designated as a prerequisite for one or both minors.
  - cannot be double-counted with a major unless it is a prerequisite for the minor, designated as a related course requirement for the major, designated a prerequisite/basic course requirement for the major, or there is otherwise a special rule.

For more information refer to the following resources:

- This Catalog, particularly Requirements (p. 216) but also rules specified for individual Weinberg College majors and minors.
- The Weinberg College webpage Frequently Asked Questions about Double-Counting (<https://weinberg.northwestern.edu/undergraduate/degree/post-spring-2023-degree/double-counting-faq.html>).
- The Weinberg College Advisers (<https://weinberg.northwestern.edu/undergraduate/advising/weinberg-college-advisers/>) at the Office of Undergraduate Studies and Advising.

## Non-Northwestern Academic Credit Applied to Foundational Disciplines and Perspectives Requirements

Normally students can apply only coursework completed at Northwestern towards satisfying *foundational disciplines* and *perspectives on power, justice, and equity*, but there are a few exceptions. See Transfer Students-Special Policies (p. 221), and the exceptions described below. Note also at least one course in each foundational area must be completed for a regular Northwestern letter grade (A,B,C,D-scale) so students should carefully plan if they intend to use both test-based (AP or IB) and Study Abroad coursework towards foundational disciplines, and/or complete some courses at Northwestern under P/N grading.

### Test-based Credit (AP and IB)

A maximum of two of the 12 units applied towards the foundational discipline requirements can be credits awarded based on sufficiently high scores in College Board Advanced Placement or International Baccalaureate (HL) subjects, but two may not be applied to the same foundational area. Qualifying scores and subjects are reevaluated annually based on revisions to the AP and IB curricula, and revisions to the Weinberg College curriculum. Because one course in each foundational area must be completed for a regular letter grade (A,B,C,D-scale) a test-based credit cannot be paired with a second test-based

credit or with a course taken at Northwestern under the P/N grading option. Additional information can be found on the Weinberg College webpage under AP and IB Exams (<https://weinberg.northwestern.edu/undergraduate/first-year-transfer/first-year/placement-and-credit/ap-and-ib-exams/>).

### **Study Abroad Credit**

Northwestern courses taken abroad, if designated for foundational discipline and/or perspectives requirements, may be applied in the same way as courses taken on campus. Students who take non-Northwestern courses on endorsed study abroad experiences transfer back units of credit (no grade is posted to the Northwestern transcript), and students may petition to apply a limited number of transfer course units towards foundational disciplines and/or perspectives. **Only one course unit for each study abroad term, for a maximum of two units**, may be applied to these requirements.

A student who studies abroad for *one term* and transfers back credits may, upon review and approval, apply a **maximum of one** course unit to:

- A foundational discipline, **or...**
- Perspectives on power, justice, and equity, **or...**
- A foundational discipline **and** perspectives on power, justice, and equity, if the course is deemed applicable to both.

A student who studies abroad for *more than one term* and transfers back credits may, upon review and approval, apply a **maximum of two** course units in one of the following ways:

- Two different foundational discipline areas, **or...**
- One to a foundational discipline, and one to perspectives on power, justice, and equity, **or...**
- Two different foundational discipline areas, with one of those units **also** applied to perspectives on power, justice, and equity, if the course is deemed applicable to both.

### **Taking Courses at Other Institutions**

Students must secure prior approval from the Weinberg College Office of Undergraduate Studies and Advising before taking courses at other U.S. institutions that they will submit for Northwestern credit. University, College, and department and program rules govern how many courses taken at other institutions a student may count toward requirements, where they may be taken, in which areas of study they may be, and which requirements they may fulfill. Information about credit from other institutions is available from the Office of the Registrar. Courses taken at other institutions but not accepted for credit by Northwestern cannot count toward a Weinberg College degree.

Many Weinberg College students spend time studying abroad, most often for a summer or for part or all of junior year. The University's Global Learning Office (GLO (<https://www.northwestern.edu/abroad/>)) is an essential source of information about programs around the world as well as about the rules and process for going abroad. Advisers in GLO, the College's Office of Undergraduate Studies and Advising, and the departments and programs can help students select programs that fit their academic needs.

### **Transfer Students - Special Policies**

Students admitted to Northwestern as transfer students from another college or university are generally covered under the same policies as students admitted as first-year students, with a few exceptions. Any additional study away from Northwestern after matriculation (for example

study abroad) needs to be planned particularly carefully in consultation with advisors.

- The university Undergraduate Registration Requirement (p. 27) contains special rules for transfer students.
- Transfer students are exempt from the College seminar and first-year writing seminar.
- Students must take at least four 300-level courses at Northwestern in their major. If the major requires fewer than four 300-level courses, then all required 300-level courses must be completed at Northwestern.
- Upon transfer to Northwestern, credits from the prior institution(s) will be evaluated and some may be eligible to be directed to various Weinberg College degree requirements. For the two-unit foundational discipline areas, transfer students are subject to the same rules as all other students limiting the number of credits based on Advanced Placement (AP) or International Baccalaureate (IB) testing, and likewise for the rules limiting courses completed with a grade of P. A pre-matriculation transfer unit is allowed to be paired with an eligible test-based credit or an eligible course completed with a P, and two transferred units may be used to satisfy a foundational discipline area. After matriculation at Northwestern, any work completed outside Northwestern and transferred back (see Registrar's webpage, Transfer Credit after Matriculation (<https://www.registrar.northwestern.edu/registration-graduation/transfer-and-test-credit/transfer-credit-after-matriculating-at-nu.html>)) is subject to the same policies that apply to students admitted as first-year students (see Taking Courses at Other Institutions (p. 221)).

### **Interschool Transfer Students - Special Policies**

Some students begin at Northwestern as degree candidates in one of the other undergraduate programs and enter Weinberg College through the interschool transfer (p. 25) process.

- Students who begin their studies in another school at Northwestern before interschool transfer to Weinberg College are exempt from the College seminar requirement.
- Students who begin their studies in the McCormick School of Engineering and Applied Sciences and have completed both ENGLISH 106-1 and ENGLISH 106-2 have satisfied the first-year writing seminar component of the written and oral expression requirement.

### **Class Registration and Changes to Registration**

University-wide information about registration and registration changes is updated on the Registrar's Office website (see Registration Guidelines (<https://www.registrar.northwestern.edu/registration-graduation/registration/>)).

College-specific information about adding, dropping, or withdrawing from classes is updated on the Weinberg College website (see Adding and Dropping Classes (<https://weinberg.northwestern.edu/undergraduate/courses-registration-grades/adding-dropping.html>)).

### **Grade Changes**

Final grades generally cannot be changed except in the case of approved incompletes. More information can be found on the Weinberg College website under Changing Grades (<https://weinberg.northwestern.edu/undergraduate/courses-registration-grades/changing-grades.html>).

## Academic Probation and Dismissal

The assignment of probation is notice that progress toward the degree is unsatisfactory. It is not noted on the student's official transcript and does not jeopardize eligibility to participate in extra-curricular activities. Criteria for being placed on probation, steps students should take in response to a notice of probation, and criteria for removal from probation are summarized on the Weinberg College website under Academic Probation (<https://weinberg.northwestern.edu/undergraduate/courses-registration-grades/academic-probation.html>). See also Academic Standing (p. 26) in this Catalog. Students who do not correct the academic deficiency within the period of probation may be dismissed from the University, generally for a period of one year.

## Interruption of Program of Study

Students who were making satisfactory progress under the prior formulation of the BA (as spelled out in the 2022-2023 or earlier Catalog editions) and resume their studies after a brief interruption continue to follow their original degree requirements. University policy (see Readmission to the University (p. 26)) states that if a student returns after an extended period of absence and degree requirements have changed, the new requirements must normally be met.

In cases of extended absence, the College may consider petitions for the following substitutions and exceptions:

- One first-year seminar completed with a passing grade: substitute for the *College seminar*. Two first-year seminars completed with a passing grade: substitute for the *College seminar* and the *first-year writing seminar*.
- Completion of the writing proficiency requirement: waiver of the *advanced expression* requirement. (If writing proficiency was not demonstrated before the absence, *advanced expression* cannot be waived.)
- Completion of distribution requirements with a grade of D or higher: substitute for *foundational discipline* courses according to the following system:
  - Distribution Area I in place of FD-NS courses for *Natural Sciences*
  - Distribution Area II in place of FD-EDR courses for *Empirical and Deductive Reasoning*
  - Distribution Area III in place of FD-SBS courses for *Social and Behavioral Sciences*
  - Distribution Area IV in place of FD-HS courses for *Historical Studies*
  - Distribution Area V in place of FD-EET courses for *Ethical and Evaluative Thinking*
  - Distribution Area VI courses in place of FD-LA for *Literature and Art*
- If at the point of readmission the student has junior or senior standing (see Student Status (p. 25) for definitions): waiver of one or both parts of the *Perspectives on Power, Justice, and Equity* requirement.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Academic Options and Support

For updates and additional information about academic options and support in Weinberg College, see the undergraduate section of the Weinberg College website (<https://weinberg.northwestern.edu/undergraduate/>).

### Advising, Support, and Mentoring

The resources of the College work in concert with other advising, support, and mentoring opportunities at the university; see also Academic Support (p. 49) in this Catalog.

#### Academic Advising

Weinberg College provides an integrated academic advising structure centered in the college's Office of Undergraduate Studies and Advising, where faculty advisers are available throughout the year to assist students in all aspects of academic and career planning. Each first-year student is assigned an adviser who in nearly all cases is the student's instructor in a fall-quarter College seminar. At the end of fall quarter each student is assigned a Weinberg College adviser, who will continue to be that student's adviser through graduation. In addition, each Weinberg department and program has a corps of faculty advisers who counsel undergraduates about course selections, majors and minors, and research and career opportunities.

#### Career Pathways

Weinberg College offers excellent preparation for subsequent training in professions such as law, medicine, and management, and each year many graduates pursue professional study in these areas. Other students go on to graduate work in other areas or enter the workforce directly. All majors can furnish suitable preparation for professional schools, provided appropriate courses are taken. No major, however, is intended solely as pre-professional training.

The College advisers in the Office of Undergraduate Studies and Advising, along with advisers in the departments and programs, help students design academic programs that combine the breadth of a liberal arts education with preparation for whatever they hope to do next. Northwestern Career Advancement (<https://www.northwestern.edu/careers/>) is another resource; several career counselors specialize in helping Weinberg students identify career goals and paths toward achieving them.

#### Arch Scholars

The Weinberg College **Arch Scholars** programs are designed to welcome, engage, and support first-generation and lower-income college students, as well as students from high schools that offered little or no AP or IB preparation. Arch Scholars includes two summer programs for incoming students (Bio&ChemEXCEL and Bridge), two programs for first-year students interested in performing either laboratory (NU Bioscientist) or non-laboratory (Posner) research in the summer before their sophomore year, and a peer mentoring program where first-year students are matched with program alumni who will help them make the transition from high school to college.

## Academic Options in Weinberg College

Students may customize their program(s) of study with various academic opportunities that intersect with, or can be completed in addition to, basic degree requirements.

#### Adjunct Majors

The Weinberg College adjunct majors are designed to accompany a regular major. More in-depth than a minor, an adjunct major facilitates

exploration of an interdisciplinary academic area that complements a primary major. African studies, environmental policy and culture, global health studies, international studies, mathematical methods in the social sciences, and science in human culture are adjunct majors. An adjunct major by itself does not satisfy the major study requirement for the Weinberg College degree. See also Policies (p. 219) and Grade Requirements (p. 219) pertaining to College majors.

## Minors

Students may choose to complete a minor at Northwestern, selecting from among Weinberg College minors or minors offered by other academic units (see Minors (p. 33) under Additional Baccalaureate Options section of this Catalog). Minor requirements are listed under the appropriate headings in this catalog. Completion of a minor is optional, not a degree requirement. See also Policies (p. 219) and Grade Requirements (p. 219) pertaining to College minors.

## Study Abroad

Weinberg College students are encouraged to study abroad. The philosophy of the College is that the best foreign study experience combines continued work in a student's chosen course of study with significant opportunities for immersion in the culture of the host country. For example, a political science student might study the European Union in France. The College encourages participation in full-academic-year programs that include extensive study of languages and culture. The Office of the Provost offers grants for intensive summer foreign language study abroad. As early as the first year, interested students should discuss study abroad plans with their advisers and obtain information from the Global Learning Office (<https://www.northwestern.edu/abroad/>).

## Undergraduate Research

Weinberg College is committed to facilitating student research and to helping undergraduates immerse themselves in challenging, intense explorations through well-focused projects. Courses in the College often include research components. In addition, many students work with faculty members as research assistants for pay, as volunteers, or for course credit (see Independent Study (p. 223)). Students who are eligible may work on research projects in pursuit of honors in their majors (see Honors in the Major (p. 224)).

The College, as well as some of its departments and programs, awards competitive grants to support research and creative projects of students working under faculty guidance. Academic-year awards cover some research expenses, and some summer awards also provide assistance with living expenses. Conference travel grants help fund travel to professional conferences to present research or creative work. The University's Undergraduate Research Grant Program is another source of research funding for qualified students. See Support for Undergraduate Research Endeavors (p. 43) for information.

## Types of Courses

Most courses taken by Weinberg College students are standard parts of the Northwestern curriculum - offered by the College and the other undergraduate schools. Most cannot be repeated for credit, but some are variable-focus, often with titles like "Special Topics" or "Introductory Topics," and allow faculty to share with students their enthusiasm for and knowledge about current areas of study. Other special categories of courses offered in the College are described below. Note that for certain types of courses there may be limitations on the number of units that may be applied to the degree; see Weinberg Credit and Quarter Requirements (p. 218) under Requirements for the Degree of Bachelor of Arts.

## Independent Study and Undergraduate Seminars

Registering for an *independent study* course allows students to earn course credit by working on a research or creative project under the supervision of a faculty member. Consent of the department or program is required to take these courses (most often offered under the course number 399), and they are generally open to juniors and seniors though some students may qualify earlier in some academic fields. Upper-level undergraduate seminars (often offered under the course number 398) also require department or program permission, and some are linked to the process of writing a senior thesis.

University policy (see Undergraduate Research (p. 43)) is that students may not register for more than two units of independent study in a quarter. Students may not take independent study to make up for credit they lack as a result of failure or uncompleted courses. For limits on the number of units that may be applied towards the degree see Weinberg Credit and Quarter Requirements (p. 218) under Requirements for the Degree of Bachelor of Arts.

## Internship-Linked Courses

Many students seek to enrich their education with practical experiences gained off campus. Chicago Field Studies (p. 267) administers several programs that combine seminars taught on campus with internships typically at Chicago-area organizations. Other Weinberg College departments and programs also offer opportunities for coursework combined with off-campus work. These are described in their sections of this catalog. For limits on the number of internship-linked units that may be applied towards the degree, see Weinberg Credit and Quarter Requirements (p. 218) under Requirements for the Degree of Bachelor of Arts. See Internships for Credit (<https://weinberg.northwestern.edu/undergraduate/enrichment-opportunities/internships-and-volunteering/internships-for-credit.html>) on the College website for a list of options counting toward the limit.

## Professional Linkage Seminars

These seminars approach social and work-related concerns through the eyes of an accomplished nonacademic professional with an affinity for the liberal arts and a gift for intellectual inquiry. By linking liberal education to professional issues, these courses illustrate how theory and practice affect and enrich one another.

## Student-Organized Seminars

Weinberg College students who desire to study topics in arts and sciences that are not covered in the College's course offerings may initiate their own courses under the supervision of sponsoring faculty members. Enrollment in these seminar courses is limited to 20 students. The student organizer or organizers must, in consultation with the faculty sponsor, prepare a plan for the seminar and submit it to the Office of Undergraduate Studies and Advising before the middle of the quarter preceding the quarter in which the seminar is held. The plan must include a topic description, a reading list, specification of the work that will be graded (such as term papers and written examinations), prerequisites, and the meeting schedule. Students may enroll in only one Student-Organized Seminar (GEN\_LA 298-0) a quarter, and enrollment must be on the P/N basis. Weinberg College students interested in organizing a seminar should consult rules for student-organized seminars (<https://weinberg.northwestern.edu/undergraduate/courses-registration-grades/student-organized-seminars.html>) on the Weinberg College website for further details.

## Honors and Awards

Additional information can be found in this Catalog under Graduation Honors (p. 25).

### Honors in the Major

Each major in Weinberg College offers a program that may lead to the awarding of honors in the major to graduating seniors with outstanding records of achievement. Criteria vary by major, but all share certain features. Students recommended for honors in the major must

- Complete with distinction the regular courses required for the major and at least two quarters of 398 or 399 or their equivalent, or 400-level courses, or some combination thereof. (These courses may count toward major requirements in some departments and programs.) GPA criteria vary by major.
- Complete a research project or other type of integrative work under the guidance of a faculty adviser. The project must result in a research report, thesis, or other tangible record; coursework by itself is not sufficient. Simple data collection, computer programming, analysis of data with canned programs, and summaries of primary or secondary sources are not by themselves bases for the award of honors in the major.

Each major has an undergraduate honors committee responsible for administering its honors program and for preparing the final recommendations for honors submitted in May to the Weinberg College Committee on Undergraduate Academic Excellence. The faculty adviser proposes a student for honors and writes a letter describing and evaluating the student's project. A faculty member typically unconnected with the project must submit another letter giving independent and substantive judgments. The departmental honors committee reviews nominations during spring quarter and takes a separate recorded vote on each candidate. Approved nominations are reviewed by the Committee on Undergraduate Academic Excellence, which makes the final decision.

Information on procedures for students pursuing separate honors in two departments or programs, or interdisciplinary honors spanning two majors, is available from the Office of Undergraduate Studies and Advising and on the webpage at honors in two departments or programs (<https://weinberg.northwestern.edu/undergraduate/enrichment-opportunities/honors-awards/honors-two-departments.html>).

### Other Academic Awards and Honors

Each year Weinberg College awards several prizes and honors to exceptional students. Recognition is given for outstanding writing in College seminars and first-year writing seminars, and outstanding academic achievement in certain areas of study. Each quarter the college's Dean's List honors students with sufficiently high grades. Each spring the Northwestern chapter of the liberal arts honorary society Phi Beta Kappa elects juniors and seniors to membership. Seniors whose grade point averages meet certain criteria graduate with College honors. In addition, many departments and programs recognize outstanding achievement by their students. This includes recommending students for graduation with department or program honors (see Honors in the Major, above).

The College also awards funds to students working on research projects and creative activities; see Undergraduate Research (p. 223) for an overview.

## Cross-School Options

Weinberg College students participate in many academic opportunities outside of the College, sometimes taking individual courses of interest and sometimes completing a formal program of study.

### Dual Bachelor's Degree Programs (BA/BS and BA/BMus)

Two programs allow undergraduates to combine a bachelor's degree in the liberal arts with a bachelor's degree in another Northwestern undergraduate school. One results in a BA from Weinberg College and a BS from the McCormick School of Engineering and Applied Science, and the other results in a BA from Weinberg College and a BMus from the Bienen School of Music. Both options typically require five years of study. For more information see the Dual Bachelor's Degrees (p. 38) section of this catalog.

### Bachelor's/Master's Degree Programs

Undergraduate students doing outstanding work may be accepted into one of the accelerated master's or combined degree programs approved by the Graduate School. These students may receive permission to double-count some courses toward both bachelor's and master's degrees.

The approved BA/MA or BA/MS programs in chemistry (<https://catalogs.northwestern.edu/tgs/chemistry/chemistry-bach-mast/>), comparative literary studies (<https://catalogs.northwestern.edu/tgs/comparative-literary-studies/comparative-literary-studies-bach-mast/>), computer science (<https://catalogs.northwestern.edu/tgs/computer-science/computer-science-bach-mast/>), economics (<https://catalogs.northwestern.edu/tgs/economics/economics-bach-mast/>), French (<https://catalogs.northwestern.edu/tgs/french-francophone-studies/french-bach-mast/>), linguistics (<https://catalogs.northwestern.edu/tgs/linguistics/linguistics-bach-mast/>), plant biology and conservation (<https://catalogs.northwestern.edu/tgs/plant-biology-conservation/plant-biology-conservation-bach-mast/>), public health (<https://catalogs.northwestern.edu/tgs/public-health/public-health-bach-mast/>) and statistics (<https://catalogs.northwestern.edu/tgs/statistics/statistics-bach-mast/>) share the goal of selecting and training exceptional students. No particular grade point average in undergraduate courses, however high, automatically entitles a student to participate in an accelerated master's program. Some information can be found on the Graduate School's website at [at Bachelor's/Master's Combined Degree \(https://www.tgs.northwestern.edu/admission/academic-programs/explore-programs/combined-degree.html\)](https://www.tgs.northwestern.edu/admission/academic-programs/explore-programs/combined-degree.html). Students should check with their specific program for application requirement details.

### Teaching Certification

Students enrolled in a number of departments of Weinberg College may simultaneously pursue secondary teaching certification through the School of Education and Social Policy. Students may earn science certification with a biology, chemistry, or physics designation; social science certification with an economics, history, or political science designation; or certification in English, mathematics, or Spanish.

Majors in the certification areas who wish to be considered for teaching certification must apply, be admitted to, and complete all requirements of the Secondary Teaching Program (p. 130) as described in the School of Education and Social Policy chapter of this catalog. Applications should be submitted to the Office of Student Affairs in the School of Education and Social Policy.

## Other Cross-School Options

Many other cross-school possibilities are included in this catalog. Certificates (p. 29) open to Weinberg undergraduates are offered through the School of Education and Social Policy, the McCormick School of Engineering and Applied Science, the Kellogg School of Management, and the Medill School of Journalism, Media, Integrated Marketing Communications. Minors (p. 33) in several of Northwestern's undergraduate schools, as well as other options in music, are also open to Weinberg College students. For more information see the relevant school chapter of this catalog. Interested students should also contact the schools through which the options are offered.

## Student Organizations

### Department and Program Organizations

Many departments and programs within the college sponsor student organizations. Some are honorary organizations, recognizing students who have achieved distinction within their fields of study. Others provide opportunities for students with common interests to come together for academic, social, career-focused, and service activities that complement classroom experiences.

### Weinberg College Student Advisory Board

The Weinberg College Student Advisory Board is the primary source of student advice to the dean and the associate dean for undergraduate academic affairs. Members also serve on several college committees. The board includes representatives from every Weinberg College department and program offering a major or a minor.

## Advanced Expression

In courses meeting Advanced Expression (AE), the second part of the Written and Oral Expression requirement for the WCAS bachelor's degree, students demonstrate high-level achievement in their ability to **Express**: articulate their ideas in oral, written, visual, digital, and other media, and assemble narratives, explanations, data, and arguments that navigate carefully ordered evidence. Some students demonstrate this level via their works in a language other than English.

Courses that meet the AE requirement focus on effective communication, be it through writing, speaking or other modes of communication, in specific disciplinary or interdisciplinary contexts. AE courses are typically taken after the first year.

## Learning Objectives for AE

- Understand and emulate field-specific conventions and protocols for communicating findings to a range of audiences
- Develop the relationship between their voice and field-specific norms of expression, aiming to achieve control over persuasive rhetoric

## AE Courses

Courses approved for the 2024-2025 academic year.

Course	Title
AMER_ST 390-1	Senior Project
AMER_ST 390-2	Senior Project
ANTHRO 322-0	Introduction to Archaeology Research Design & Methods
ANTHRO 386-0	Methods in Human Biology Research
ANTHRO 389-0	Ethnographic Methods and Analysis
ANTHRO 398-0	Senior Seminar
ART 360-0	Senior Critique
ART 372-0	Seminar
ART_HIST 391-0	Art Historical Methods Seminar
ASIAN_LC 300-0	Advanced Topics in Chinese Literature and Culture
ASIAN_LC 340-0	Advanced Topics in Korean Literature and Culture
ASIAN_LC 360-0	Advanced Topics in South Asian Languages and Cultures
ASIAN_LC 370-0	Literary Cultures in South Asia
ASIAN_LC 390-0	Advanced Topics in Asian Languages and Cultures
ASIAN_LC 392-0	Advanced Studies in Asian Film, Media, and Visual Culture
ASTRON 321-0	Observational Astrophysics
BIOL_SCI 377-0	The Human Microbiome
BIOL_SCI 393-0	Human Genomics
BIOL_SCI 397-0	Senior Thesis Colloquium
CLASSICS 310-0	Archaeology of the Ancient Mediterranean
CLASSICS 320-0	Greek and Roman History
CLASSICS 330-0	Ancient Economy
CLASSICS 340-0	Greek and Roman Drama
CLASSICS 350-0	Greek and Latin Literature
CLASSICS 380-0	Classical Reception Studies
COG_SCI 345-0	Presenting Ideas & Data
COMM_ST 381-0	Media, Movements, & Social Change
ECON 398-1	Senior Seminar
ECON 398-2	Senior Seminar
ENGLISH 300-0	Seminar in Reading and Interpretation
ENGLISH 305-0	Advanced Composition
ENGLISH 310-0	Studies in Literary Genres
ENGLISH 311-0	Studies in Poetry
ENGLISH 312-0	Studies in Drama
ENGLISH 313-0	Studies in Fiction
ENGLISH 322-0	Medieval Drama
ENGLISH 323-1	Medieval Poetry
ENGLISH 324-0	Studies in Medieval Literature
ENGLISH 331-0	Renaissance Poetry
ENGLISH 332-0	Renaissance Drama
ENGLISH 338-0	Studies in Renaissance Literature
ENGLISH 339-0	Studies in Shakespeare
ENGLISH 340-0	Studies in 18th-Century Literature
ENGLISH 344-0	18th-Century Fiction
ENGLISH 351-0	Romantic Poetry
ENGLISH 353-0	Studies in Romantic Literature
ENGLISH 357-0	19th-Century British Fiction
ENGLISH 359-0	Studies in 19th-Century Literature
ENGLISH 361-0	20th and 21st Century Poetry
ENGLISH 363-0	20th and 21st Century Fiction
ENGLISH 365-0	Studies in Postcolonial Literature
ENGLISH 368-0	Studies in 20th- and 21st-Century Literature
ENGLISH 369-0	Studies in African Literature
ENGLISH 371-0	American Novel
ENGLISH 372-0	American Poetry
ENGLISH 374-0	Studies in Native American and Indigenous Literatures
ENGLISH 375-0	Studies in Asian American Literature
ENGLISH 377-0	Topics in Latinx Literature
ENGLISH 378-0	Studies in American Literature
ENGLISH 380-0	Studies in Multiethnic American Literature
ENGLISH 381-0	Literature & Medicine

ENGLISH 383-0	Special Topics in Theory	HISTORY 350-0	Soviet History Through Film
ENGLISH 385-0	Studies in Literature and Culture	HISTORY 351-0	Europe in the Age of Total War
ENGLISH 386-0	Studies in Literature and Film	HISTORY 352-0	A Global History of Death and Dying
ENGLISH 388-0	Studies in Literature and Ethics	HISTORY 353-0	History of Capitalism, 1500-1850
ENGLISH 397-0	Research Seminar for Literature Majors	HISTORY 367-0	History of Mexico
ENVR_POL 309-0	American Environmental History	HISTORY 376-0	Global Environments and World History
ENVR_POL 340-0	Global Environments and World History	HISTORY 379-0	Biomedicine and World History
FRENCH 334-0	Montaigne and Modernity	HISTORY 382-0	The Modern Japanese City
FRENCH 355-0	Topics in Modern and Contemporary French Literature and Culture	HISTORY 385-2	History of Modern South Asia, ca. 1750-present
FRENCH 362-0	African Literatures and Cultures	HISTORY 386-2	Southeast Asia in the Age of Empire
FRENCH 365-0	The Maghreb and the Middle East	HISTORY 386-3	Southeast Asia: Decolonization & Independence
FRENCH 367-0	Transnational Francophone Studies	HISTORY 393-0	Approaches to History
FRENCH 371-0	Giants, Cannibals, and Critique	HISTORY 395-0	Research Seminar
FRENCH 375-0	French Film	HISTORY 398-1	Thesis Seminar
FRENCH 386-0	Gender & Writing	HISTORY 398-2	Thesis Seminar
FRENCH 390-0	Topics in Literature and Culture	HISTORY 398-3	Thesis Seminar
FRENCH 395-0	Advanced Studies in Culture and Thought	ISEN 375-0	Issues in Environmental Philosophy
GBL_HLTH 309-0	Biomedicine and World History	LATIN 310-0	Readings in Latin Literature
GBL_HLTH 340-0	Mental Health and the Arts	LEGAL_ST 207-0	Legal Studies Research Methods
GERMAN 211-0	German Culture through Film	LEGAL_ST 308-0	Sociology of Law
GERMAN 221-1	Introduction to German Literature: 1800-1900	LEGAL_ST 398-1	Advanced Research Seminar 1
GERMAN 221-2	Introduction to German Literature: 1900-1945	LEGAL_ST 398-2	Advanced Research Seminar 2
GERMAN 221-3	Introduction to German Literature: 1945-today	LING 315-0	Experimental Approaches to Word Form Processing
GERMAN 245-0	Special Topics in German Literature and Culture	LING 320-0	Sociolinguistics
GERMAN 303-0	Advanced Expression in German speaking	MATH 395-0	Undergraduate Seminar
GERMAN 305-0	Advanced Creative Expression in German writing	MMSS 398-1	Senior Seminar
GERMAN 307-0	German Mass Media: from broadcast to stream	MMSS 398-2	Senior Seminar
GERMAN 309-1	The German Market and the Globalized Economy	MMSS 398-3	Senior Seminar
GERMAN 309-2	Germany, Inc.: Marketing and Corporate Social Responsibility	NEUROSCI 398-0	Senior Thesis Seminar
GERMAN 321-1	Reason, Revolution, and Despair: 1800-1900	PHIL 364-0	Business and Professional Ethics
GERMAN 321-2	Myth and Modernity: 1900-1945	PHIL 375-0	Issues in Environmental Philosophy
GERMAN 321-3	Recoveries and Transitions: 1945-Present	PHIL 380-0	Philosophy of Art
GERMAN 322-0	German Contributions to World Literature	PHIL 398-1	Senior Tutorial
GERMAN 327-0	The German Avant-Garde and the Culture of Modernism	PHIL 398-2	Senior Tutorial
GERMAN 331-0	Shattered Worlds: Representation after the Shoah	PHYSICS 360-0	Advanced Physics Laboratory
GERMAN 333-0	Literature of the Cold War	POLISH 358-1	Polish for Advanced and Native Speakers
GERMAN 334-0	Writers and their Critics	POLISH 358-2	Polish for Advanced and Native Speakers
GERMAN 335-0	Minority Voices in Germany	POLI_SCI 395-0	Political Research Seminar
GERMAN 344-2	German History: Germany Since 1945	POLI_SCI 398-1	Senior Thesis Seminar
GERMAN 345-0	Topics in German Literature and Culture	POLI_SCI 398-2	Senior Thesis Seminar
GERMAN 346-0	Topics in German Literature and Culture	PSYCH 205-0	Research Methods in Psychology
GNDR_ST 361-0	Gender, Sexuality, and Literature	PSYCH 345-0	Presenting Ideas & Data
GNDR_ST 381-0	Queer Theory	RELIGION 295-0	Ahimsa: Nonviolence in South Asia and Beyond
GNDR_ST 396-0	Senior Capstone Seminar	RELIGION 301-0	Hindu Epics: Mahābhārata
GREEK 301-0	Readings in Greek Literature	RELIGION 309-0	Topics in Hinduism
HIND_URD 320-0	Topics Hindi-Urdu Literature	RELIGION 312-0	Buddhism and Gender
HISTORY 309-0	American Environmental History	RELIGION 314-0	Buddhism in the Contemporary World
HISTORY 319-0	US Foreign Relations	RELIGION 316-0	Religion and the Body in China
HISTORY 327-0	Histories of Violence in the United States	RELIGION 351-0	Islamic Law
HISTORY 341-0	Paris: World City, 1700 to the Present	RELIGION 360-0	Black Religions
HISTORY 344-2	German History: Germany Since 1945	RELIGION 374-0	Contemporary Religious Thought
HISTORY 345-1	History of Russia, 800-1917: From Kievan Rus to the Bolshevik Revolution	RUSSIAN 302-1	Advanced Russian in Conversations
HISTORY 345-2	History of Russia, 1917-1991: The Soviet Union	RUSSIAN 302-2	Advanced Russian in Conversations
		RUSSIAN 302-3	Advanced Russian in Conversations
		SLAVIC 390-0	History and Culture in Central and Eastern Europe
		SLAVIC 392-0	East European Literature and Visual Arts
		SOCIAL 227-0	Legal Studies Research Methods

SOCIAL 306-0	Sociological Theory
SOCIAL 318-0	Sociology of Law
SOCIAL 320-0	Gender, Health, and Medicine
SOCIAL 329-0	Field Research and Methods of Data Collection
SOCIAL 356-0	Sociology of Gender
SOCIAL 398-1	Senior Research Seminar
SOCIAL 398-2	Senior Research Seminar
SPANISH 250-0	Literature in Spain before 1700
SPANISH 251-0	Literature in Spain since 1700
SPANISH 260-0	Literature in Latin America before 1888
SPANISH 261-0	Literature in Latin America since 1888
SPANISH 335-0	Modern Fiction in Spain: Studies in Genre
SPANISH 340-0	Colonial Latin American Literature
SPANISH 343-0	Latin American Avant-Gardes
SPANISH 345-0	Reading the 'Boom'
SPANISH 349-0	Critical Thought in Latin Amer
SPANISH 350-0	Visual Culture in Latina/o America and Spain
TRANS 310-0	Seminar in Transportation and Logistics

**AFST 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**AFST 276-0 African Literature in Translation (1 Unit)** Continental African literature. Content varies. May be repeated for credit with different topic. Taught with COMP\_LIT 270-0; may not receive credit for both courses with same topic. *Literature Fine Arts Distro Area*

**AFST 360-SA Culture, Language, and Identity in South Africa (1 Unit)** Introduction to South African populations and cultures through direct experience and representations in history, art, literature, languages, and customs. Discussions of South African cultures and ethnicity, language use and policy, and identity. Restricted to students in Northwestern's South Africa program. *Social Behavioral Sciences Distro Area*

#### **AFST 390-0 Topics in African Studies (1 Unit)**

A general examination of topics relevant to African studies. May be repeated for credit with change of topic. Restricted to students in Northwestern's South Africa program.

**AFST 390-SA Topics in African Studies (1 Unit)** A general examination of topics relevant to African studies. May be repeated for credit with change of topic. Restricted to students in Northwestern's South Africa program.

**AFST 392-1 Herskovits Undergraduate Research Award (1 Unit)** 2-course sequence required for recipients of the Herskovits Undergraduate Research Award. Consecutive enrollment required in AFST 392-2.

**AFST 392-2 Herskovits Undergraduate Research Award (1 Unit)** 2-course sequence required for recipients of the Herskovits Undergraduate Research Award. Prerequisite: AFST 392-1.

**AFST 395-0 Senior Research Seminar (1 Unit)** Capstone seminar addressing both techniques of research and the substance of a significant issue in African studies. Students develop skills at formulating a research topic and organizing research.

**AFST 399-0 Independent Study (1 Unit)** May be repeated for credit with change of topic.

## **Swahili Courses**

**SWAHILI 111-1 Swahili I (1 Unit)** Basic literacy skills and interactive proficiency; Swahili in cultural and historical context.

**SWAHILI 111-2 Swahili I (1 Unit)** Basic literacy skills and interactive proficiency; Swahili in cultural and historical context. Prerequisite: SWAHILI 111-1 or equivalent.

**SWAHILI 111-3 Swahili I (1 Unit)** Basic literacy skills and interactive proficiency; Swahili in cultural and historical context. Prerequisite: SWAHILI 111-2 or equivalent.

**SWAHILI 111-SA-1 Swahili I (1 Unit)** Basic literacy skills and interactive proficiency; Swahili in cultural and historical context.

**SWAHILI 121-1 Swahili II (1 Unit)** Development of literacy and interactive proficiency skills; introduction to verbal arts. In Swahili. Prerequisite: SWAHILI 111-3 or equivalent.

**SWAHILI 121-2 Swahili II (1 Unit)** Development of literacy and interactive proficiency skills; introduction to verbal arts. In Swahili. Prerequisite: SWAHILI 121-1.

**SWAHILI 121-3 Swahili II (1 Unit)** Development of literacy and interactive proficiency skills; introduction to verbal arts. In Swahili. Prerequisite: SWAHILI 121-2.

## **African Studies**

africanstudies.northwestern.edu

In 1948 the distinguished scholar Melville J. Herskovits organized the Program of African Studies at Northwestern, and the program remains a model of Africanist study and research. Through sponsorship of multidisciplinary courses with African content, language training, and promotion of Africa-based study, it supports and enlivens the undergraduate study of Africa while serving as the University's "headquarters" for formal and informal interaction among interested students, faculty, and visitors. The program brings undergraduates studying Africa together with faculty and other experts in many areas of inquiry—across disciplinary boundaries and regional specializations—for lectures, seminars, workshops, conferences, and research programs. Northwestern's Melville J. Herskovits Library of African Studies, an unparalleled resource for students and scholars, is the largest Africana collection in existence with subject matter ranging from art, history, literature, music, science, technology and religion to communications, engineering, management and cooking. Over the years the program has remained in active contact with its counterparts in Africa and elsewhere, while expanding its role in the University and off-campus communities.

The program offers both an adjunct major and a minor. Although there is no formal language requirement for either, students are strongly encouraged to study a non-English language that is spoken in Africa or its diaspora, such as Swahili, Arabic, French, German, Italian, Portuguese, or Spanish. Competence in a foreign language can facilitate individual research projects, widen understanding of particular topics, and increase study abroad opportunities.

## **Programs of Study**

- African Studies Adjunct Major (p. 228)
- African Studies Minor (p. 228)

## **African Studies Courses**

**AFST 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SWAHILI 121-SA-1 Swahili II (1 Unit)** Development of literacy and interactive proficiency skills; introduction to verbal arts. In Swahili. Prerequisite: SWAHILI 111-3 or equivalent.

**SWAHILI 216-1 Introduction to Swahili Literature (1 Unit)** Swahili verbal arts in the oral tradition. Prerequisite: SWAHILI 121-3 or equivalent. *Literature Fine Arts Distro Area*

**SWAHILI 216-2 Introduction to Swahili Literature (1 Unit)** Classical Swahili literature. Prerequisite: SWAHILI 216-1. *Literature Fine Arts Distro Area*

**SWAHILI 216-3 Introduction to Swahili Literature (1 Unit)** Standard Swahili literature. Prerequisite: SWAHILI 216-2. *Literature Fine Arts Distro Area*

**SWAHILI 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Swahili. Prerequisite: consent of instructor.

## African Studies Adjunct Major

The adjunct major is structured to serve two broad aims.

First, students are exposed to the geographical and disciplinary breadth of African studies. To that end, all students take 200-level core courses in African history, anthropology, literature, and/or politics, as well as 7 elective courses chosen from an array of disciplines, including African studies, African American studies, anthropology, history, political science, religious studies, and several language and literature departments.

Second, students engage in in-depth research or immersion practicums, the products of which they develop in a capstone senior research seminar. Practicums often involve a central research component, but other proposed practicums of acceptable quality, depth of immersion, etc., may be approved. Among the experiences that may satisfy this requirement with appropriate content are study abroad in Africa, research connected to the Program of African Studies, internships, and independent study and senior capstone projects.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Adjunct Major Requirements (11 units)

Course	Title
3 core courses chosen from:	
AFST 276-0	African Literature in Translation
ANTHRO 255-0	Contemporary African Worlds
HISTORY 255-1	African Civilizations
HISTORY 255-2	Africa in the Age of Early Modern Empires
HISTORY 255-3	Modern Africa
POLI_SCI 359-0	Politics of Africa
<i>If more than three are taken, additional courses from this list may count toward the next group.</i>	
7 additional courses chosen from an approved list (available on the program website).	
1 senior seminar.	

AFST 395-0	Senior Research Seminar
There is also a required research or immersion practicum experience (see below)	

- The 11 courses must be selected from at least three departments.
- At least 3 courses must be at the 300 level.
- All adjunct majors require completion of a stand-alone major as well.
- At most 2 courses counted toward the African studies adjunct major may be double-counted toward another major.

## Research or Immersion Practicum

- The quarter-long practicum must be approved by the program.
- It must directly relate to African studies.
- Credit earned through the practicum may count as 1 of the 7 additional courses with adviser permission.

## Honors in African Studies

Majors with strong academic records and an interest in pursuing honors should submit an application to the director of undergraduate studies during spring of their junior year. In addition to the AFST 395-0 Senior Research Seminar, at least 2 of the following must be included among the 11 courses for the adjunct major: AFST 399-0 Independent Study, AFST 392-1 Herskovits Undergraduate Research Award, AFST 392-2 Herskovits Undergraduate Research Award, or an approved graduate seminar. A report on original research or some other integrative capstone project, such as organizing a relevant conference or exhibition, is also required.

Students whose capstone projects and grades meet department criteria are recommended to the college for graduation with honors. For further information contact the director of undergraduate studies and see Honors in the Major (p. 222).

## African Studies Minor

The minor in African studies approaches the study of African societies, cultures, histories, and arts across disciplines in the humanities, social sciences, and professions. Students earning a bachelor's degree in Weinberg College or another Northwestern school may complete the minor. In addition, undergraduates in all disciplines are welcome to participate formally or informally in the program's activities, which advance the training of Africa specialists at Northwestern and promote awareness of Africa in a wider context.

## Minor Requirements (6 units)

Course	Title
At least 2 courses must be from the following sequence:	
HISTORY 255-1	African Civilizations
HISTORY 255-2	Africa in the Age of Early Modern Empires
HISTORY 255-3	Modern Africa
1 course must be:	
ANTHRO 255-0	Contemporary African Worlds
3 elective courses:	
At least half of the work in a course taken through another department must have African studies content. Selections must be approved by the program.	
<ul style="list-style-type: none"> <li>• Students must have at least an overall B average in the 6 courses.</li> <li>• Only 1 course for the minor may be double-counted towards a major.</li> </ul>	

- Students must declare the minor at least two terms before they intend to graduate. They are encouraged to meet regularly with program staff and the director of undergraduate studies to monitor their progress.

Approved electives are listed on the program website (<https://www.africanstudies.northwestern.edu/>) each quarter.

## American Studies

[amstp.northwestern.edu](http://amstp.northwestern.edu)

The American Studies Program is interdisciplinary, comparative, and internationally oriented. The competitive-admissions major examines the development and expressions of national culture alongside those of borderland and diasporic American cultures and amongst global cultures. It draws on a broad range of faculty from the humanities and social sciences so that students can examine components of US culture and the diverse experiences of Americans and others affected by Americans locally, nationally, and globally. Students are allowed a wide-ranging yet disciplined exploration that crosses the boundaries of traditional academic fields. All students write a thesis explicitly dealing with the United States in a comparative or global dimension.

Because this selective honors program has more applicants than available space, admission depends in part on academic distinction and on demonstrated interest in comparative American cultures. First- and second-year students apply for admission to the major early in spring quarter.

Study abroad and upper-level language proficiency are strongly encouraged.

## Program of Study

- American Studies Major (p. 229)

**AMER\_ST 301-1 Seminar for Majors (1 Unit)** Set of required courses structured to share a broad comparativist or internationally oriented theme, integrating methods and materials from different disciplines. Change of instructor each quarter; change of theme every year. Limited to 20 students.

**AMER\_ST 301-2 Seminar for Majors (1 Unit)** Set of required courses structured to share a broad comparativist or internationally oriented theme, integrating methods and materials from different disciplines. Change of instructor each quarter; change of theme every year. Limited to 20 students.

**AMER\_ST 301-3 Seminar for Majors (1 Unit)** Set of required courses structured to share a broad comparativist or internationally oriented theme, integrating methods and materials from different disciplines. Change of instructor each quarter; change of theme every year. Limited to 20 students.

**AMER\_ST 310-0 Studies in American Culture (1 Unit)** Readings and discussions of topics in American cultural life—for example, law in 20th century America or television news in contemporary US culture. Limited enrollment with emphasis on student participation. Prerequisites vary. May be repeated for credit with consent of program director.

**AMER\_ST 390-1 Senior Project (1 Unit)** Thesis or field study. Required of majors. *Advanced Expression*

**AMER\_ST 390-2 Senior Project (1 Unit)** Thesis or field study. Required of majors. *Advanced Expression*

## American Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Program Courses (5 units)</b>	
To be taken during the first year in the major:	
AMER_ST 301-1	Seminar for Majors
& AMER_ST 301-2	and Seminar for Majors
& AMER_ST 301-3	and Seminar for Majors
To be taken during senior year:	
AMER_ST 390-1	Senior Project
& AMER_ST 390-2	and Senior Project
<b>Related Courses (10 units)<sup>1</sup></b>	
1 approved course from African American Studies, Asian American Studies, Latina and Latino Studies, or the Center for Native American and Indigenous Research	
2 of the following, preferably 1 history and 1 English:	
HISTORY 210-1	North America and the United States to 1865
HISTORY 210-2	History of the United States, Reconstruction to the Present
ENGLISH 270-1	American Literary Traditions (Puritans to Moby Dick)
ENGLISH 270-2	American Literary Traditions (Mid-19th Century to World War I)

7 additional courses chosen with the program director <sup>2,3</sup>

<sup>1</sup> Must be at the 200 or 300 level.

<sup>2</sup> Theme of courses should have strong U.S. dimension but also global or comparative implications.

<sup>3</sup> At least 1 course must be relevant to the theme but not centered on the United States.

## Honors in American Studies

In senior year all majors participate in the senior project seminar (AMER\_ST 390-1 & AMER\_ST 390-2) and work on a thesis on a topic of their choice. Students meet weekly with their project advisers, the seminar instructor, and fellow seniors to discuss their projects and common concerns. Students whose senior theses and grades are judged to meet program criteria are recommended to the college for graduation with honors. For more information consult the program director and see Honors in the Major (p. 222).

## Anthropology

[anthropology.northwestern.edu](http://anthropology.northwestern.edu)

Anthropology is the study of humankind from a broadly comparative and historical perspective. Anthropology advances understanding of human biological and cultural diversity around the world and across time. In a changing world, anthropology provides for cross-cultural comparative analysis of diversities and inequalities. Understanding cultural, biological, and linguistic differences and similarities is central to almost any career, and students gain a critical understanding of ethical issues at play in a diverse, globalized world.

Anthropology draws on the humanities, social sciences, and natural sciences to answer compelling questions about humankind, including how the species evolved, how biology, language, and culture became its defining characteristics, and how and why cultures change over time.

Anthropology's breadth makes the major ideal for students seeking a strong liberal arts and sciences education. Students are prepared for careers not only in anthropology and archaeology but also in a range of fields including medicine, public health, law, journalism, marketing, international development, and business.

The department's faculty bring together the four subfields of anthropology (archaeology, cultural anthropology, biological anthropology, and linguistic anthropology) to develop a holistic understanding of human diversity.

Students are encouraged to participate in a variety of departmental field and laboratory research projects in archaeology, ethnography, and human biology that offer the opportunity to conduct original research, which can be an integral part of a senior thesis project.

## Programs of Study

- Anthropology Major (p. 233)
- Anthropology Minor (p. 235)

**ANTHRO 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ANTHRO 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ANTHRO 211-0 Culture & Society (1 Unit)** Introduction to the comparative study of culture, exploring different types of social organization and their economic and political correlates in the context of contemporary globalization. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ANTHRO 213-0 Human Origins (1 Unit)** Emergence of the human species through the process of organic evolution, emphasizing genetics, the fossil record, and comparison with our nearest living relatives. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ANTHRO 214-0 Archaeology: Unearthing History (1 Unit)** The evolution of culture from its earliest beginnings through the development of urbanism and the state. Principles of archaeological research. *Historical Studies Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ANTHRO 215-0 The Study of Culture through Language (1 Unit)** The scope of linguistic anthropology, from the study of language as an end in itself to the investigation of cultures through the medium of human languages. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ANTHRO 221-0 Social and Health Inequalities (1 Unit)** Bidirectional relationship between social (e.g., class, gender, and racial/ethnic) and health inequalities, including institutional/structural, individual/family/psychosocial, and biological mechanisms. *Social Behavioral*

*Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**ANTHRO 232-0 Myth and Symbolism (1 Unit)** Introduction to different approaches to the interpretation of myth and symbolism, e.g., Freudian, functionalist, and structuralist. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**ANTHRO 235-0 Language in Asian America (1 Unit)** Survey of linguistic anthropological topics relevant to Asian American communities, including bilingualism, code switching, language socialization, language shift, style, sociolinguistic variation, indexicality, media, and semiotics. ANTHRO 235-0 and ASIAN\_AM 235-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**ANTHRO 238-0 Food in Culture & Society (1 Unit)** This class explores food in all its cultural and social dimensions: deep history and origins; social, economic and political organization of the modern food industry; and cultural significance. Individual research projects allow in-depth study of one food; speakers, videos and experiential assignments take students out of the classroom to meet the people who sell, make, and grow our food. *Global Perspectives on Power, Justice, and Equity Social and Behavioral Science Foundational Discipl*

**ANTHRO 240-0 Anthropology of Money (1 Unit)** A survey of cultural and ethnographic approaches to money and finance. Topics of investigation include "primitive money," the uses of money in religious and ritual practices, social and cultural meanings of numbers, mobile money, crypto-currency and other alternative currency systems, and the politics of central banking. Prerequisite: None. *Social Behavioral Sciences Distro Area*

**ANTHRO 242-0 Porous Borders? Geography, Power and Techniques of Movement (1 Unit)** At the advent of globalization scholars have argued that the movements of capital, commodities and people across nation-states have rendered their borders increasingly porous. The death of the nation-state was announced elsewhere. Yet, in the epoch of offshored refugee processing centers and border walls, this assumed porosity of borders begs a reexamination of broader geographies of power and techniques of movement. *Social Behavioral Sciences Distro Area*

**ANTHRO 255-0 Contemporary African Worlds (1 Unit)** Use of key anthropological insights about value judgments and cultural relativism to examine the survival strategies and turbulent histories of contemporary African societies. *Ethics Values Distro Area*

**ANTHRO 275-0 Introduction to Forensic Anthropology (1 Unit)** This course provides an introductory overview of forensic anthropology by reviewing a range of issues associated with human skeletal identification including recovery techniques, time since death, biological profile development, trauma analysis, mass disasters investigation, and ethical consideration in forensic anthropology. These will serve as a model for understanding the broader aspects of the interaction between anthropology and the medicolegal system. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ANTHRO 290-0 Topics in Anthropology (1 Unit)** Intermediate work in areas of developing interest and special significance. May be repeated for credit with different topic.

**ANTHRO 306-0 Evolution of Life Histories (1 Unit)**

Evolved strategies for allocating resources among growth, reproduction, and maintenance; emphasis on the biological processes underlying the human life cycle and its evolution.

**ANTHRO 307-0 Anthropology of Peace (1 Unit)** Cultural and ethnographic approaches to peace, peace building and peace activism. Topics of investigation include the concept of "peaceful societies," cultural mechanisms for conflict resolution, truth and reconciliation, the relationship between peace and commerce, and the role of literature, art and material culture in peace activism. Prerequisite: None. *Social Behavioral Sciences Distro Area*

**ANTHRO 309-0 Human Osteology (1 Unit)** Introduction to human skeletal anatomy and biology. Identification and classification of human bones through hands-on dry-lab-based analysis. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

#### **ANTHRO 312-0 Human Population Biology (1 Unit)**

Current theory and research in human biological diversity, focusing on the impact of ecological and social factors on human biology; how adaptation to environmental stressors promotes human biological variation.

Prerequisite: ANTHRO 213-0.

*Natural Sciences Distro Area*

**ANTHRO 313-0 Evolutionary Medicine (1 Unit)** In this course we explore how evolution has made our bodies susceptible to the role of environments and social forces, including factors like stress, discrimination and inequality. We consider fields at the interface of the social and biological, including genetics, epigenetics and social epidemiology. *Social Behavioral Sciences Distro Area*

#### **ANTHRO 314-0 Human Growth & Development (1 Unit)**

Integrated biological and cultural perspective on human growth and development from infancy through adolescence; cross-cultural variation in developmental processes and outcomes.

Prerequisite: 100-or 200-level anthropology, biology, or psychology course or consent of instructor.

#### **ANTHRO 315-0 Medical Anthropology (1 Unit)**

Theories of interactions between culture and biology that affect human health. Beliefs and practices for curing illness and maintaining wellbeing. Cross-cultural study of infectious and chronic diseases, mental illness, infant/maternal mortality, poverty, and gender.

Prerequisite: 100-or 200-level anthropology or sociology course or consent of instructor.

#### **ANTHRO 317-0 Human Evolution (1 Unit)**

Fossil record and reconstruction of phylogeny; morphological and behavioral adaptation of early hominids and forebears.

*Natural Sciences Distro Area*

#### **ANTHRO 318-0 Material Worlds of the Middle Ages (1 Unit)**

Landscapes, buildings, and material culture of medieval Europe, as seen through archaeology and related disciplines.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

#### **ANTHRO 319-0 Material Life & Culture in Europe, 1500-1800 (1 Unit)**

Landscapes, buildings, and material culture of early modern Europe, as seen through archaeology and related disciplines.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

#### **ANTHRO 320-0 Peoples of Africa (1 Unit)**

A survey of the cultures of Africa and the significant similarities and differences among the indigenous societies of the continent.

*Social Behavioral Sciences Distro Area*

#### **ANTHRO 321-0 Archaeological Field Methods (1 Unit)**

Practical training in basic methods and techniques at an excavation site; given with summer Archaeology Field School.

#### **ANTHRO 322-0 Introduction to Archaeology Research Design & Methods (1 Unit)**

Regional and site-specific approaches to the description and analysis of patterns in archaeological data, including settlement survey, site characterization, vertical excavations, and horizontal household excavations.

*Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ANTHRO 324-0 Archaeological Survey Methods (1 Unit)** Unique contributions of archaeological surveys to research about past peoples and places. Course uses geospatial technologies, such as shallow geophysics and GIS. *Historical Studies Distro Area*

#### **ANTHRO 325-0 Archaeological Methods Laboratory (1 Unit)**

Analysis of archaeological methods (faunal, botanical, artifact, or soil analysis) with various techniques. May be repeated for credit.

**ANTHRO 326-0 Archaeologies of Sustainability and Collapse (1 Unit)** Archaeological survey of case studies from the past to interrogate human-environment relationships across time and space, including the present and the future. ANTHRO 326-0 and ENVR\_POL 385-0 taught together, may not receive credit for both.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **ANTHRO 327-0 Historical Archaeology (1 Unit)**

Archaeology of the past 500 years in the Americas. Study of the material remains people left behind: architecture, burials, food remains, clothing and jewelry, etc. Analysis of race, class gender and indigeneity are core themes. European colonialism, resistance, capitalism, and power are explored, and presentation or exclusion of groups in depictions of history and in the creation new identities (ethnogenesis).

*Historical Studies Distro Area Historical Studies Foundational Discipline*

**ANTHRO 328-0 The Maya (1 Unit)** The archaeology of the Maya in Latin America; life and society in pre-Columbian Maya civilization. *Historical Studies Distro Area*

**ANTHRO 329-0 Archaeology and Nationalism (1 Unit)** The course explores the role of archaeology in the creation and elaboration of national identities (18th C century to present): the institutionalization of archaeology; development of museums and practices of display/interpretation; archaeological sites as national monuments and tourist destinations; and cultural property legislation and artifact repatriation. HUM 329-0 and ANTHRO 329-0 are taught together; may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

#### **ANTHRO 330-0 Peoples of the World (1 Unit)**

Comparative ethnography of a regionally or historically associated group of cultures or a type of community defined in ecological, ideological, or other terms. May be repeated for credit.

*Social Behavioral Sciences Distro Area*

#### **ANTHRO 332-0 The Anthropology of Reproduction (1 Unit)**

Marriage and reproduction throughout the world, particularly the developing world and Africa. Conjugal strategies, fertility, contraception. *Social Behavioral Sciences Distro Area*

#### **ANTHRO 334-0 The Anthropology of HIV/AIDS: Ethnographies (1 Unit)**

The experiences of HIV-positive people; local and global policies shaping access to treatment; contributions of anthropologists to reducing HIV/AIDS globally. Readings from classic and current ethnographies.

Prerequisite: 300-level course in anthropology or sociology.

*Social Behavioral Sciences Distro Area*

#### **ANTHRO 339-0 Material Culture (1 Unit)**

Relationship between material objects and social life; review of theoretical approaches to gifts and commodities; ethnographic collecting

in colonial and postcolonial settings; relationship between culture and aesthetics.

Prerequisite: ANTHRO 211-0 or consent of instructor.

*Social Behavioral Sciences Distro Area*

**ANTHRO 340-0 Visual Anthropology of Africa (1 Unit)** Anthropological analysis of techniques, visual rhetoric, and narrative strategies embedded in images of Africa and Africans in a variety of contemporary and digital media. Course includes instruction in video production. Prerequisite: 200-level social science or African studies course or consent of instructor.

**ANTHRO 341-0 Economic Anthropology (1 Unit)**

Economic organization in small-scale non-industrialized communities. Traditional structures of primitive and peasant economies.

*Social Behavioral Sciences Distro Area*

**ANTHRO 343-0 Anthropology of Race (1 Unit)** Anthropological approaches to the analysis of race, racialization, and antiracism. Human variation, space, segregation, comparative analysis, and language ideologies. *Social Behavioral Sciences Distro Area*

**ANTHRO 350-0 Anthropology of Religion (1 Unit)**

The human relationship with the supernatural. Action patterns accompanying beliefs. Comparison of nonliterate religions and historical religions.

*Ethics Values Distro Area*

**ANTHRO 351-0 Hope and Futurity (1 Unit)**

An in-depth survey of anthropological, sociological, literary, philosophical and religious explorations into the problem of hope.

*Ethics Values Distro Area*

**ANTHRO 353-0 Shady Business: Informal Economies in Contemporary Capitalism (1 Unit)** Taking stock of world economic changes such as the collapse of socialism, the advent of globalization as well as the intensification of transnational labor migration, this course aims to reveal the categorical distinctions drawn between formal and informal economies in contemporary capitalism as historically situated and politically charged constructs. *Social Behavioral Sciences Distro Area*

**ANTHRO 354-0 Gender and Anthropology (1 Unit)**

Cross-cultural survey of women's roles from three perspectives: biosocial, sociocultural, politico-economic. Theory of gender inequality. Emphasis on the third world.

*Social Behavioral Sciences Distro Area*

**ANTHRO 355-0 Sexualities (1 Unit)**

Cross-cultural survey of sexuality from an anthropological perspective. Focus on first half of the 20th century, the 1970s, 1980s, and the turn of the 21st century.

*Social Behavioral Sciences Distro Area*

**ANTHRO 357-0 Biocultural Perspectives on Water Insecurity (1 Unit)**

Explore many ways that water impacts humans around the world through the lens of anthropology, religion, biology, environment, and politics. Why do individual's experiences with water differ? How does water insecurity manifest? How do we measure it? How do we solve it? ANTHRO 357-0 and GBL\_HLTH 357-0 are taught together; students may not receive credit for both. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ANTHRO 358-0 Primate Behavior and Ecology (1 Unit)**

This course provides an introductory overview of non-human primate behavior and ecology, covering topics nutrition, cognition, sociality, and conservation. No prerequisites. *Social Behavioral Sciences Distro Area*

**ANTHRO 359-0 The Human Microbiome and Health (1 Unit)** Discussion-based analysis of cutting-edge research on the microbes associated with the human body and their impacts on health. Consideration of historical,

social, and political influences on observed patterns. *Natural Sciences Distro Area*

**ANTHRO 360-0 Language and Culture (1 Unit)**

Relationship between language and culture; language as the vehicle of culture and as the manifestation of thought.

*Social Behavioral Sciences Distro Area*

**ANTHRO 361-0 Talk as Social Action (1 Unit)**

Analysis of talk in interaction based on examination of audio and video recorded data and associated transcripts. Conversation, action, turn, sequence, relevance, social structure, qualitative methodologies.

Prerequisite: ANTHRO 215-0 or consent of instructor.

*Social Behavioral Sciences Distro Area*

**ANTHRO 362-0 Advanced Methods in Quantitative Analysis (1 Unit)**

Advanced applications of univariate and multivariate statistics to anthropological research questions.

Prerequisite: 200-level statistics course.

*Formal Studies Distro Area*

**ANTHRO 365-0 Language, Race, & Ethnicity in the U.S. (1 Unit)**

Analysis of connections between language ideologies, language use, and meanings of race and ethnicity. Bilingualism, immigration, identity, accented English, African American English, language policy, English only movement, education, social change. ANTHRO 365-0 and ASIAN\_AM 365-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**ANTHRO 368-0 Latina and Latino Ethnography (1 Unit)** Sociocultural analysis of US Latina/o communities. Examines ethnographies by and about Latina/os based in the United States. Draws on a broad

disciplinary basis to critique and elaborate on ethnographic methods and epistemologies. Prerequisite: ANTHRO 211-0 or consent of instructor.

*Ethics Values Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ANTHRO 369-0 Contemporary Immigration to the U.S. (1 Unit)** Major theories in immigration studies; contemporary processes of immigration and immigrant "community building" in the United States. Prerequisite:

300-level course in anthropology or sociology. *Social Behavioral Sciences Distro Area*

**ANTHRO 370-0 Anthropology in Historical Perspective (1 Unit)**

Major schools of thought in social, archaeological, and biological anthropology over the last century.

Prerequisite: 200-level anthropology course or consent of instructor.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

**ANTHRO 373-0 Power and Culture in American Cities (1 Unit)**

Overview of history and present realities of American urban life, with focus on ethnographic knowledge and stratifications by class, race, ethnicity, gender, nationality, and sexuality.

Prerequisite: 100-or 200-level cultural anthropology or sociology course or consent of instructor.

*Social Behavioral Sciences Distro Area*

**ANTHRO 375-0 Advanced Methods in Forensic Anthropology (1 Unit)**

This course provides a review of advanced methods in forensic anthropology. We will discuss the full range of issues associated with human skeletal identification from biological profile construction to trauma analysis. This class will include discussion of relevant literature in forensic anthropology and hands-on, dry lab activity to better appreciate the reality of practitioners in the field. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ANTHRO 377-0 Psychological Anthropology (1 Unit)**

Contemporary approaches to cross-cultural behavior: ecocultural aspects of behavior development through maturation and socialization in human and nonhuman primates.

**Prerequisite:** introductory survey course in psychology or anthropology or consent of instructor.

*Social Behavioral Sciences Distro Area*

#### **ANTHRO 378-0 Law and Culture (1 Unit)**

Introduction to the anthropology of law; institutional knowledge as seen in material culture and legal documents; colonial and postcolonial settings; relationships between law and culture, colonialism, evidence, and globalization.

**Prerequisite:** 200-level anthropology course or consent of instructor.

*Social Behavioral Sciences Distro Area*

#### **ANTHRO 382-0 Political Ecology (1 Unit)**

Introduction to a multidisciplinary body of theory and research that analyzes the environmental articulations of political, economic, and social difference and inequality. Topics include environmental scarcity and degradation, sustainability, resilience and conservation. ANTHRO 382-0 and ENVR\_POL 384-0 taught together, may not receive credit for both.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

#### **ANTHRO 383-0 Environmental Anthropology (1 Unit)**

How humans have changed and are changing the environment and what can be done to halt environmental deterioration. Topics include population trends, food supplies, consumerism, environmental regulation, and ecological consciousness.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **ANTHRO 384-0 Traveling While Muslim: Islam, Mobility, and Security after 9/11 (1 Unit)**

What are the stakes of traveling while Muslim in that post 9/11 era of racing Islam? How do we come to understand such mobility? In probing these questions, amongst others, in this seminar we aim to examine the interlocked relationship between Islam, mobility and security. *Social Behavioral Sciences Distro Area*

#### **ANTHRO 386-0 Methods in Human Biology Research (1 Unit)**

Laboratory-based introduction to international research in human biology and health; methods for assessing nutritional status, physical activity, growth, cardiovascular health, endocrine and immune function.

**Prerequisite:** ANTHRO 213-0 or consent of instructor.

*Advanced Expression Natural Sciences Distro Area Natural Sciences Foundational Discipline*

#### **ANTHRO 389-0 Ethnographic Methods and Analysis (1 Unit)**

Descriptive, naturalistic study of the culture of human social groups. Data gathering through observation and interview. Data analysis for ethnographic reporting.

**Prerequisites:** ANTHRO 211-0 and ANTHRO 215-0.

*Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **ANTHRO 390-0 Topics In Anthropology (1 Unit)**

Advanced work in areas of developing interest and special significance. May be repeated for credit with different topic.

**ANTHRO 398-0 Senior Seminar (1 Unit)** Supervised group discussion of research during preparation of the senior thesis project. *Advanced Expression*

**ANTHRO 399-0 Independent Study (1 Unit)** Open with consent of department to juniors and seniors who have completed with distinction

at least 2 courses or the equivalent in anthropology. Under direction of individual members of department.

## **Anthropology Major**

Students complete a 13-course program (12 courses in anthropology and 1 in formal studies) for a major in anthropology. At the 200 level, courses provide background in the four major subfields of anthropology. At the 300 level, students expand both the breadth and depth of their studies, examining the philosophical and historical roots of the discipline. A research class (ANTHRO 322-0 Introduction to Archaeology Research Design & Methods, ANTHRO 361-0 Talk as Social Action, ANTHRO 386-0 Methods in Human Biology Research, or ANTHRO 389-0 Ethnographic Methods and Analysis) provides an opportunity to learn research skills and gain valuable analytical, critical thinking, and writing skills. ANTHRO 370-0 Anthropology in Historical Perspective provides an overview of the history of the field. Six additional 300-level courses include concentration courses from a subfield and from across the department.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Department Courses (12 units)</b>	
5 core courses:	
ANTHRO 211-0	Culture & Society
ANTHRO 213-0	Human Origins
ANTHRO 214-0	Archaeology: Unearthing History
ANTHRO 215-0	The Study of Culture through Language
ANTHRO 370-0	Anthropology in Historical Perspective
1 research course selected from the following:	
ANTHRO 322-0	Introduction to Archaeology Research Design & Methods
ANTHRO 361-0	Talk as Social Action
ANTHRO 386-0	Methods in Human Biology Research
ANTHRO 389-0	Ethnographic Methods and Analysis
3 300-level courses selected from a subfield:	
Archaeology (p. 234)	
Biological Anthropology (p. 234)	
Cultural Anthropology (p. 234)	
Human Biology (p. 234)	
Linguistic Anthropology (p. 234)	
3 additional 300-level courses selected from any concentration or research course <sup>1</sup>	
<b>Related Course (1 unit)</b>	
1 formal studies course <sup>2,3,4</sup>	

<sup>1</sup> For the joint Anthropology/MMSS major, MMSS 300-0 double-counts as a 300-level anthropology course (for triple major limitations see MMSS Adjunct Major (p. 361)).

<sup>2</sup> For the biological anthropology and human biology concentrations, the formal studies course must be fulfilled by STAT 202-0, STAT 210-0, PSYCH 201-0, ECON 281-0, SESP 210-0, or equivalent.

<sup>3</sup> For the archaeology, cultural anthropology, and linguistic anthropology concentrations, statistics or another formal studies course can fulfill

this requirement; a course designated for Distribution Area II and/or Foundational Discipline Empirical and Deductive Reasoning (FD-EDR).<sup>4</sup> For the joint Anthropology/MMSS major, MATH 385-0 counts as the formal methods related course requirement for anthropology.

## Subfields

### Archaeology

Course	Title
ANTHRO 318-0	Material Worlds of the Middle Ages
ANTHRO 319-0	Material Life & Culture in Europe, 1500-1800
ANTHRO 321-0	Archaeological Field Methods
ANTHRO 324-0	Archaeological Survey Methods
ANTHRO 325-0	Archaeological Methods Laboratory
ANTHRO 327-0	Historical Archaeology
ANTHRO 328-0	The Maya
ANTHRO 343-0	Anthropology of Race
ANTHRO 383-0	Environmental Anthropology
ANTHRO 390-0	Topics In Anthropology
ANTHRO 398-0	Senior Seminar

### Biological Anthropology

Course	Title
ANTHRO 306-0	Evolution of Life Histories
ANTHRO 309-0	Human Osteology
ANTHRO 312-0	Human Population Biology
ANTHRO 313-0	Evolutionary Medicine
ANTHRO 314-0	Human Growth & Development
ANTHRO 317-0	Human Evolution
ANTHRO 359-0	The Human Microbiome and Health
ANTHRO 362-0	Advanced Methods in Quantitative Analysis
ANTHRO 375-0	Advanced Methods in Forensic Anthropology
ANTHRO 390-0	Topics In Anthropology
ANTHRO 398-0	Senior Seminar

### Cultural Anthropology

Course	Title
ANTHRO 307-0	Anthropology of Peace
ANTHRO 315-0	Medical Anthropology
ANTHRO 320-0	Peoples of Africa
ANTHRO 330-0	Peoples of the World
ANTHRO 332-0	The Anthropology of Reproduction
ANTHRO 334-0	The Anthropology of HIV/AIDS: Ethnographies
ANTHRO 339-0	Material Culture
ANTHRO 340-0	Visual Anthropology of Africa
ANTHRO 341-0	Economic Anthropology
ANTHRO 350-0	Anthropology of Religion
ANTHRO 351-0	Hope and Futurity
ANTHRO 353-0	Shady Business: Informal Economies in Contemporary Capitalism
ANTHRO 354-0	Gender and Anthropology
ANTHRO 355-0	Sexualities
ANTHRO 368-0	Latina and Latino Ethnography
ANTHRO 369-0	Contemporary Immigration to the U.S.
ANTHRO 373-0	Power and Culture in American Cities
ANTHRO 377-0	Psychological Anthropology
ANTHRO 378-0	Law and Culture

ANTHRO 384-0	Traveling While Muslim: Islam, Mobility, and Security after 9/11
ANTHRO 390-0	Topics In Anthropology
ANTHRO 398-0	Senior Seminar

### Human Biology

See Concentration in Human Biology for requirements.

### Linguistic Anthropology

Course	Title
ANTHRO 360-0	Language and Culture
ANTHRO 365-0	Language, Race, & Ethnicity in the U.S.
ANTHRO 378-0	Law and Culture
ANTHRO 390-0	Topics In Anthropology
ANTHRO 398-0	Senior Seminar

## Concentration in Human Biology

The human biology concentration is a good option for students interested in pursuing careers in the health sciences or graduate work in the biological sciences. The concentration combines a core foundation in basic science with an integrative perspective on the human organism, drawing on both the biological and the social sciences. Coursework emphasizes the study of human biology and health from a comparative and evolutionary perspective.

In their first and second years students complete the introductory (200-level) anthropology requirements as well as foundational courses (which are also premedical school requirements). Junior- and senior-year coursework includes 300-level courses in biological anthropology/human biology and related courses from other departments.

Course	Title
<b>Department Courses (12 units)</b>	
5 core courses:	
ANTHRO 211-0	Culture & Society
ANTHRO 213-0	Human Origins
ANTHRO 214-0	Archaeology: Unearthing History
ANTHRO 215-0	The Study of Culture through Language
ANTHRO 370-0	Anthropology in Historical Perspective
1 research course:	
ANTHRO 386-0	Methods in Human Biology Research
3 concentration courses chosen from:	
ANTHRO 306-0	Evolution of Life Histories
ANTHRO 309-0	Human Osteology
ANTHRO 312-0	Human Population Biology
ANTHRO 313-0	Evolutionary Medicine
ANTHRO 314-0	Human Growth & Development
ANTHRO 317-0	Human Evolution
ANTHRO 359-0	The Human Microbiome and Health
ANTHRO 362-0	Advanced Methods in Quantitative Analysis
ANTHRO 375-0	Advanced Methods in Forensic Anthropology
ANTHRO 390-0	Topics In Anthropology
ANTHRO 398-0	Senior Seminar
3 additional 300-level courses selected from any concentration or research course	
<b>Related Courses</b> <sup>1</sup>	
BIOL SCI 201-0	Molecular Biology
BIOL SCI 202-0	Cell Biology
BIOL SCI 203-0	Genetics and Evolution

BIOL SCI 232-0	Molecular and Cellular Processes Laboratory (0.34 units)
BIOL SCI 233-0	Genetics and Molecular Processes Laboratory (0.34 units)
BIOL SCI 234-0	Investigative Laboratory (0.34 units)
BIOL SCI 301-0	Principles of Biochemistry
CHEM 110-0 & CHEM 131-0 & CHEM 141-0 & CHEM 132-0 & CHEM 142-0  or CHEM 151-0 & CHEM 161-0 & CHEM 152-0 & CHEM 162-0  or CHEM 171-0 & CHEM 181-0 & CHEM 172-0 & CHEM 182-0	Quantitative Problem Solving in Chemistry and Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I and Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II  General Chemistry I and General Chemistry Laboratory I and General Chemistry II and General Chemistry Laboratory II  Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory and Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory
CHEM 215-1 & CHEM 235-1 & CHEM 215-2 & CHEM 235-2	Organic Chemistry I and Organic Chemistry Lab I and Organic Chemistry II and Organic Chemistry Lab II
Students completing the chemistry major organic sequence CHEM 212-1,2,3 (old numbers) CHEM 217-1, CHEM 217-2, and CHEM 217-3 (new numbers) with labs may use these courses instead of CHEM 215-1, 215-2 with labs.	
MATH 220-1 & MATH 220-2  or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Differential Calculus and Single-Variable Integral Calculus  Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
PHYSICS 130-1 & PHYSICS 130-2 & PHYSICS 130-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3  or PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3  or PHYSICS 140-1 & PHYSICS 140-2 & PHYSICS 140-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	College Physics and College Physics and College Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory  General Physics and General Physics and General Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory  Fundamentals of Physics and Fundamentals of Physics and Fundamentals of Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
1 course chosen from:	
STAT 202-0	Introduction to Statistics and Data Science
STAT 210-0	Introduction to Probability and Statistics
PSYCH 201-0	Statistical Methods in Psychology
ECON 281-0 or ECON 381-1	Introduction to Applied Econometrics Econometrics
SESP 210-0	Introduction to Statistics and Research Methodology
or equivalent statistical methods course approved by the department	

<sup>1</sup> Units depend on chemistry and mathematics sequences taken. Most are also premedical school requirements.

## Relevant Courses in the Bienen School of Music

Course	Title
MUSICOL 323-0	Topics in Ethnomusicology

## Summer Field Schools

*Archaeology Field School:* Courses may include the following, some of which are also offered on the Evanston campus.

Course	Title
ANTHRO 321-0	Archaeological Field Methods
ANTHRO 322-0	Introduction to Archaeology Research Design & Methods
ANTHRO 325-0	Archaeological Methods Laboratory

For additional information, contact the Department of Anthropology.

## Honors in Anthropology

Majors with strong academic records and an interest in pursuing original research in anthropology during their senior year are encouraged to submit an application to the honors coordinator by spring of junior year to write a senior honors thesis. The thesis requires completing ANTHRO 399-0 Independent Study in the fall quarter and ANTHRO 398-0 Senior Seminar in the winter quarter of senior year. ANTHRO 398-0 Senior Seminar (but not ANTHRO 399-0 Independent Study) may be counted toward the 300-level requirements for the major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For additional information review the department website, consult the honors coordinator, and see Honors in the Major (p. 222).

## Anthropology Minor

The minor in anthropology provides students in other fields with a framework to pursue a particular focus within the discipline. Such a focus might be within a subfield of anthropology (e.g., biological anthropology, archaeology, cultural anthropology, linguistic anthropology), in area studies (e.g., Africa, the Middle East, the United States), or in a specific topic (e.g., ethnicity, gender, the origins of the state, urban studies). The minor combines 2 200-level courses and 4 300-level courses that constitute a coherent focus.

Students pursuing the minor should consult with the department's undergraduate adviser to establish a program.

Course	Title
<b>Minor Requirements (6 units)</b>	
2 core courses chosen from:	
ANTHRO 211-0	Culture & Society
ANTHRO 213-0	Human Origins
ANTHRO 214-0	Archaeology: Unearthing History
ANTHRO 215-0	The Study of Culture through Language
4 300-level courses	

## Arabic

See Middle East and North African Languages (p. 373).

# Art History

[arthistory.northwestern.edu](http://arthistory.northwestern.edu)

Art history explores the world's art and architecture from antiquity to the present, considering the transformation of artistic styles, techniques, and movements while tracing their influences and impact on societies over time and across geographies. This involves studying objects and practices from various perspectives, including their material form, sensory experience, and historical, ideological, and social contexts. Art history is alert to the ways in which artworks and other artifacts are tied to near and distant cultures and locations by performance, religion, and ritual, in addition to relations of exchange, encounter, coalition, competition, domination and resistance.

At Northwestern, we emphasize object-based study, critical analysis, and advanced written and oral expression. Through coursework, undergraduates are introduced to methods of interpretation and expression that support a wide range of career paths, including museums and art galleries, academia and law, science and technology, journalism and critical writing, as well as medicine and political organizing. Students pursuing art history are part of a vibrant community in which undergraduates, graduate students, faculty, and guest visitors regularly interact to present ideas, exchange insights, and engage in spirited dialogue. Undergraduates routinely pursue their interests in art history beyond coursework by participating in the student-led Northwestern Art Review and the Block Museum of Art Student Associates program. The curriculum is also enhanced by the Warnock Lecture Series, which brings a preeminent art historian, artist, and/or critic to campus each quarter to deliver a lecture for an undergraduate audience.

Undergraduates at Northwestern can pursue a major or minor in art history. Majors and minors meet with the Director of Undergraduate Studies (DUS) at the beginning of the academic year to plan their courses. For majors, the curriculum includes a methods seminar taken in junior year that fosters a sense of common purpose and helps a student decide whether they might pursue writing a senior thesis. The DUS handles all official processes, such as the petition to graduate, study abroad approval, and honors thesis procedures.

## Programs of Study

- Art History Major (p. 238)
- Art History Minor (p. 239)

**ART\_HIST 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ART\_HIST 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ART\_HIST 220-0 Introduction to African Art (1 Unit)** Introduction to art making in Africa; historical periods and regions of focus may vary depending on instructor. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 222-0 Black Art in the TransAtlantic World (1 Unit)** Introduction to the visual arts and art history of the African diaspora, including the Caribbean, Brazil, and the United States, from the 19th

century to present day. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 224-0 Introduction to Ancient Art (1 Unit)** Introduction to the art and architecture of the ancient Near Eastern, Egyptian, Aegean, Greek, and Roman worlds. *Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 225-0 Introduction to Medieval Art (1 Unit)** Introduction to the art and architecture of Europe and the Middle East from the third to fifteenth centuries CE. *Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 230-0 Introduction to Art of the United States (1 Unit)** Survey of the art and architecture of the United States in its cultural context, from the art of conquest to contemporary production. *Literature Fine Arts Distro Area*

**ART\_HIST 232-0 Introduction to the History of Architecture: 1400 to Present (1 Unit)** The theory and history of architecture in relation to cities and landscape; historical periods and regions of focus may vary depending on the instructor. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 235-0 Introduction to Latin American Art (1 Unit)** Survey of the work of artists and groups from throughout the various countries of Central and South America from colonial times to the present. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 240-0 Introduction to Asian Art (1 Unit)** Introduction to the art and architecture of Asia from ancient cultures to contemporary developments, including religious, court, and popular genres. Depending on the instructor, this course covers South/Southeast Asia or East Asia. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 250-0 Introduction to Early Modern European Art (1 Unit)** Leading centers and artists of Europe from the later Middle Ages to the 19th century, with attention to their global context. Architecture, sculpture, painting, and graphic arts in relation to their social and cultural settings. *Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 255-0 Introduction to Modernism (1 Unit)** Conceptual introduction to modernism, covering art and visual culture from the late-19th century to the mid-20th century, with a focus on Europe and the United States. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 260-0 Introduction to Contemporary Art (1 Unit)** Conceptual and thematic introduction to art since the 1960s, with attention to the impact of new technologies, social and political change, globalization, and the ongoing transformation of artistic production and distribution. *Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 318-0 Exhibiting Antiquity: The Culture and Politics of Display (1 Unit)** Examination of the construction of Mediterranean antiquity through modes of reception since 1750. Analysis of programs of collecting and display and the intersection of institutional and scholarly agendas. ART\_HIST 318-0, CLASSICS 397-0 and HUM 397-0 taught together; may receive credit for only 1 of these courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area*

**ART\_HIST 319-0 Special Topics in Ancient Art (1 Unit)** Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included monsters and civilization; monument and commemoration in antiquity; narrative in ancient art; and the Roman provinces.

**ART\_HIST 320-1 Medieval Art: Byzantine (1 Unit)** Art and architecture of the Byzantine (Eastern Roman) empire in its larger Mediterranean, Middle Eastern and Eastern European context from the fourth to fifteenth century. *Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 320-2 Medieval Art: Early Medieval (1 Unit)**

Art and architecture of Europe from late antiquity to the twelfth century.

*Literature Fine Arts Distro Area*

**ART\_HIST 320-3 Medieval Art: Late Medieval (1 Unit)** Art and architecture of Europe from the twelfth to fifteenth centuries.

*Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 329-0 Special Topics in Medieval Art (1 Unit)**

Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included the early Christian church; history of illuminated manuscripts; pilgrimage and saints' cults; the cathedral; Spain; art and crusade.

#### **ART\_HIST 330-1 Early Modern European Art 1400–1500 (1 Unit)**

Painting, sculpture, architecture, and the graphic arts in Europe from 1400–1500.

*Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 330-2 Early Modern European Art 1500–1600 (1 Unit)**

Painting, sculpture, architecture, and the graphic arts in Europe from 1500–1600.

*Literature Fine Arts Distro Area*

#### **ART\_HIST 339-0 Special Topics in Early Modern Art (1 Unit)**

Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included cartography, colonial Mexico, and European court cultures.

**ART\_HIST 340-1 Baroque Art: Italy & Spain 1600–1800 (1 Unit)** Painting and sculpture in Italy, Spain, and Latin America from 1600–1800. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 342-0 Eighteenth-Century European Art (1 Unit)** Survey of European art, architecture, decorative arts, and material culture of the “long eighteenth century” (ca. 1670 to ca. 1815 CE) with a specific attention paid to Europe’s colonial and imperial legacy during the period.

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 349-0 Special Topics in 17th & 18th-Century Art (1 Unit)**

Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included the art of Diego Velázquez, marble sculpture, and the transatlantic Dutch world.

#### **ART\_HIST 350-1 19th-Century Art 1: 1789–1848 (1 Unit)**

Survey of European painting, sculpture, photography, and/or architecture from 1789 to 1848.

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 350-2 19th-Century Art 2: 1848–1914 (1 Unit)**

Survey of European painting, sculpture, photography, and/or architecture from 1848 to 1914.

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 359-0 Special Topics in 19th-Century Art (1 Unit)**

Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included European colonialism in Egypt, Haussmann's Paris, and Mary Cassatt.

*Historical Studies Foundational Discipline Literature and Arts Foundational Discipline*

#### **ART\_HIST 360-0 20th Century Art (1 Unit)**

Painting, sculpture, architecture, design, and visual culture of the 20th century. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 365-0 Art of the United States (1 Unit)** Survey of the arts and visual culture in the United States, encompassing architecture, painting, sculpture, photography, prints, film, and popular culture. *Literature Fine Arts Distro Area*

#### **ART\_HIST 367-0 Special Topics in Art of the Americas (1 Unit)**

Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included nationalism and internationalism in US art; the myth of the US; the artist in society; elite and popular visual traditions.

**ART\_HIST 368-0 Special Topics in Modern Art (1 Unit)** Content varies-for example, art of the Russian Revolution; the avant-garde; totalitarian art; art during war; modernism and its discontents; art and decolonization; medium specificity. *Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ART\_HIST 369-0 Special Topics in Contemporary Art (1 Unit)**

Content varies and may coincide with local exhibitions- for example, art and activism; utopia and dystopia in recent practice; participatory art; video art; art criticism; globalization; visual cultural studies; photography in/as art; installation art; truth and fiction in recent practice.

#### **ART\_HIST 370-1 Architecture & Landscapes, 1750–1890 (1 Unit)**

The history and theory of architecture, especially in relation to cities and landscape, from 1750 to 1890.

*Literature Fine Arts Distro Area*

#### **ART\_HIST 370-2 Architecture & Landscapes, 1890 to Present (1 Unit)**

The history and theory of architecture, especially in relation to cities and landscape, after 1890.

*Literature Fine Arts Distro Area*

**ART\_HIST 375-0 Media Theory (1 Unit)** Comprehensive introduction from a humanistic perspective to theories about the nature of media and the role of technology in modern culture. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 378-0 The Global City (1 Unit)**

A critical examination of the city as a socioeconomic system; period and regions of focus vary.

*Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 379-0 Special Topics in Architectural History (1 Unit)**

Content varies depending on the expertise of the instructor and may engage with exhibitions and museums in Chicago and beyond. Past topics have included the Burnham plan of Chicago, World's Fairs, and architectural exchanges in the Global South.

**ART\_HIST 384-0 African American Art (1 Unit)**

Art of the African-descended cultures of North and South America, the Caribbean, or the wider globe.

*Literature Fine Arts Distro Area*

**ART\_HIST 385-0 Black Visual Culture: Race and Representation (1 Unit)**

Examination of how visual representations and technologies of vision have been used to create, transform, or destabilize the idea of race as it pertains to people in Africa and/or the African diaspora at specific historical moments. *Literature Fine Arts Distro Area*

**ART\_HIST 386-0 Art of Africa (1 Unit)** Thematic and historical

examination of the art and visual culture of Africa in selected periods and regions. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART\_HIST 389-0 Special Topics: Arts of Asia and the Middle East (1 Unit)**

Content varies-for example, aspects of painting in the Indian subcontinent: Mughal and Rajput; issues of gender and sexuality in Japan and China from the 18th through 20th century; art in/about the Middle East.

**ART\_HIST 390-0 Undergraduate Seminar (1 Unit)** Intended for

advanced research and writing in art history. Past topics have included art and ecology, Japanese prints, and Ottoman architecture in Egypt. Prerequisite: 300-level art history course.

**ART\_HIST 391-0 Art Historical Methods Seminar (1 Unit)** Introduction to the historiography of art history and to the different methodological approaches to the study of art and visual culture. Prerequisite: 300-level art history course. *Advanced Expression*

**ART\_HIST 395-0 Museums (1 Unit)** Museum studies seminars.

Content varies-for example, the history of museums, their ethical basis, community responsibilities, educational prerogatives, and future directions. Prerequisite: 300-level art history course. *Literature Fine Arts Distro Area*

**ART\_HIST 396-0 Internship in the Arts (1 Unit)** Direct participation, with oversight by the director of undergraduate studies, in the curatorial/educational activities of an established arts organization. By petition, on a limited basis; may be taken only once. Prerequisite: 300-level art history course or consent of instructor.

**ART\_HIST 399-0 Independent Study (1 Unit)** Special projects involving reading and conferences with a supervising professor. Arranged in

exceptional circumstances. Two quarters required for students writing a senior thesis in art history. Prerequisite: 300-level art history course.

## Art History Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Department Courses (12 units)<sup>1</sup></b>	
2 200-level courses	
10 300-level courses including:	
ART_HIST 391-0	Art Historical Methods Seminar <sup>2</sup>
At least 1 Art History 390 or 395 seminar.	
ART_HIST 390-0	Undergraduate Seminar
or ART_HIST 395-0	Museums
At least 1 Art History course in each of the following three art historical periods: 1) pre-1400 CE; 2) 1400 CE-1800 CE; and 3) post-1800 CE	
At least 2 Art History courses in Non-Euro-American art <sup>3</sup>	
<b>Studio Course (1 unit)</b>	
1 course in art making, design, or other arts course approved by the director of undergraduate studies	

<sup>1</sup> One credit of Chicago Field Studies may be substituted for either a 200- or 300-level Art History course when the internship is conducted at an arts organization approved by the director of undergraduate studies. Students conducting honors may count one of the two required ART\_HIST 399-0 courses towards the major.

<sup>2</sup> Undergraduate methods seminar should ideally be taken in junior year, especially by students who want to write an honors thesis.

<sup>3</sup> Defined as art made outside Europe and the continental USA or by diasporic communities in those regions.

## Honors in Art History

Majors with strong academic records and an interest in pursuing honors must submit an application to write a senior honors thesis to the director of undergraduate studies by the end of junior year. The thesis is written in the senior year, and submitted for evaluation near Spring break. Honors also requires:

- Successful completion of 2 independent study courses taken with the faculty thesis advisor, usually in fall and winter terms of senior year (ART\_HIST 399-0 Independent Study)
- Participation in the departmental senior thesis colloquium

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For further information see the description of the honors program on the art history department website (<https://www.arthistory.northwestern.edu/undergraduate/degree-requirements/>), contact the director of undergraduate studies, and see Honors in the Major (p. 222).

## Art History Minor

Course	Title
<b>Minor Requirements (8 units)<sup>1</sup></b>	

2 courses at the 200 level

6 courses at the 300 level

- <sup>1</sup> At least 1 300-level course must be focused on art made outside Europe and the continental USA or by diasporic communities in those regions. One credit of Chicago Field Studies may be substituted for either a 200- or 300-level Art History course when the internship is conducted at an arts organization approved by the Art History Director of Undergraduate Studies.

## Art Theory and Practice

art.northwestern.edu

As its name suggests, the Department of Art Theory and Practice explores both the making of contemporary art and the ideas and theories that drive it. Faculty and students pursue the visual arts as a theoretical discipline that pushes the boundaries of aesthetic and cultural experience. The department offers a range of courses that apply traditional approaches, adopt newer media, or use alternative strategies. The study of art practice in traditional media, such as painting, drawing, sculpture, and photography, is the core of the undergraduate course structure, enabling students to develop a solid foundation in the field's traditions and established forms. Studio art classes address both technique and critical thinking about contemporary art; these are complemented by classes in contemporary art theory. Other courses expressly look forward, exposing students to experimental approaches and a foretaste of future developments in visual art making. This dynamic curriculum incorporates digital technology, video, and conceptual art practice, thus blending new trends with traditional practices.

### Programs of Study

- Art Theory and Practice Major (p. 239)
- Art Theory and Practice Minor (p. 240)

**ART 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ART 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ART 210-0 Introduction to Drawing (1 Unit)** Introduction to basic drawing techniques and problems in line, space, perception, and the expressive use of various graphic media. No previous experience necessary.

**ART 220-0 Introduction to Painting (1 Unit)** Introduction to problems in painting and visual thinking. Includes surface preparation, color mixing, and composition. No previous experience necessary.

**ART 230-0 Introduction to Time Based Arts (1 Unit)** Introduction to a wide range of time-based art practices as used in the visual arts,

including performance, sound, and video. No previous experience necessary.

**ART 240-0 Introduction to Sculpture (1 Unit)** Introduction to basic sculptural materials and techniques and issues of three-dimensional form. No previous experience necessary.

**ART 250-0 Introduction to Photography (1 Unit)** Extensive darkroom instruction focusing on aesthetic problems and the production of high-quality black-and-white prints. No previous experience necessary.

**ART 260-0 Studio Practice (1 Unit)** Exploration of varied techniques and strategies geared toward the development of an individualized and self-directed studio practice. Prerequisite: junior standing in the major, or junior or senior standing in the minor.

**ART 270-0 Contemporary Art Survey (1 Unit)** Forms and concerns of art from the 1960s to the present, introduced in slide lecture format.

*Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART 272-0 Critical Methods for Contemporary Art (1 Unit)** Introduction to basic key terms, concepts, and analytical categories of theoretical discourses relevant to an informed and critical engagement with contemporary art. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART 360-0 Senior Critique (1 Unit)** Students complete a body of work to be shown in the senior exhibition, develop their critical skills, and learn to give articulate verbal and written expression to the concerns their art explores. Prerequisite: ART 260-0 and Junior or Senior standing in major. *Advanced Expression*

**ART 372-0 Seminar (1 Unit)**

Variable content, seminar-based course. May be repeated for credit with different topic. Note that some sections of this course are not approved for graduate credit. Please consult the course description.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ART 382-0 Studio/Seminar (1 Unit)**

Variable content course with both seminar and studio components. May be repeated for credit with different topic. Note that some sections of this course are not approved for graduate credit. Please consult the course description.

**ART 390-0 Studio (1 Unit)**

Variable content, studio-based course. May be repeated for credit with different topic. Note that some sections of this course are not approved for graduate credit. Please consult the course description.

**ART 399-0 Independent Study (1 Unit)** For advanced majors pursuing projects outside the context of regularly offered courses. Prerequisite: consent of department chair and director of undergraduate studies.

## Art Theory and Practice Major

Students majoring in art theory and practice plan a program of study with and subject to the approval of a department adviser.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Major Requirements (15 units)</b>	
<b>3 200-level courses</b>	
ART 210-0	Introduction to Drawing
ART 230-0	Introduction to Time Based Arts
ART 240-0	Introduction to Sculpture
<b>3 history and/or theory courses</b>	
ART 270-0	Contemporary Art Survey
or ART_HIST 260-0	Introduction to Contemporary Art
and any 2 of the following	
ART 272-0	Critical Methods for Contemporary Art
or ART 372-0	Seminar
or ART 382-0	Studio/Seminar
ART 260-0	Studio Practice (in junior year)
ART 360-0	Senior Critique (in senior year)
<b>7 additional courses in department</b>	
4 must be studio courses	
<ul style="list-style-type: none"> <li>• ART 372-0 Seminar, ART 382-0 Studio/Seminar, and ART 390-0 Studio may be taken more than once and counted more than once if each course is a different topic.</li> <li>• First-Year Seminars (including College Seminars and First-Year Writing Seminars) do not count toward the major.</li> </ul>	

## Honors in Art Theory and Practice

All senior majors enroll in ART 360-0 Senior Critique and produce a final exhibition or project. The department's honors committee reviews all final projects, considering innovation, creativity, scope and ambition, and realization and presentation. Students whose projects and overall records meet department criteria are recommended to the college for graduation with departmental honors. For more information consult the department adviser and see Honors in the Major (p. 222).

## Art Theory and Practice Minor

Course	Title
<b>Minor Requirements (6 units)</b>	
<b>2 200-level courses</b>	
Possible courses:	ART 210-0, ART 220-0, ART 230-0, ART 240-0, ART 250-0
<b>1 history and/or theory course</b>	
ART 270-0      Contemporary Art Survey or ART 272-0      Critical Methods for Contemporary Art or ART 260-0      Studio Practice	
<b>3 additional courses in the department at the 300-level</b>	
Possible courses: ART 372-0, ART 382-0, ART 390-0	
<ul style="list-style-type: none"> <li>• ART 372-0 Seminar, ART 382-0 Studio/Seminar, and ART 390-0 Studio may be taken more than once and counted more than once if each course is a different topic.</li> <li>• First-Year Seminars (including College Seminars and First-Year Writing Seminars) do not count toward the minor.</li> </ul>	

## Asian American Studies

asianamerican.northwestern.edu

Asian American studies is a vital component of a liberal arts education that seeks to broaden awareness and appreciation of the world. Asian American studies deepens understanding of the multiracial history and

character of the United States and also provides an opportunity to place the American experience within a larger global context.

Northwestern's Asian American Studies Program aims to provide students with an understanding of Asian American experience as fundamental to the ongoing development of American society and linked to the experiences of other racial minorities in the United States and of Asian migrants across the world. The program thus encourages students to develop informed, far-reaching perspectives that facilitate responsible participation in a rapidly changing world. As an interdisciplinary program, Asian American studies develops investigative, analytic, and critical skills while also promoting the intellectual and creative powers students need to meet the challenges of the 21st century.

Both the major and the minor in Asian American studies offer an opportunity to pursue a coherent study of Asian American communities and the experiences of Asian Americans in the United States. Students pursuing the major or minor engage in the interdisciplinary study of race, ethnicity, and migration within the modern global historical development of nationalism, imperialism, and colonialism.

## Programs of Study

- Asian American Studies Major (p. 242)
- Asian American Studies Minor (p. 242)

**ASIAN\_AM 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ASIAN\_AM 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ASIAN\_AM 203-0 Topics in Asian American Social and Cultural Analysis (1 Unit)** Issues and themes in Asian American society and culture. Recent topics include the Arab American studies, student protests, and minority conservatisms. May be repeated for credit with a different topic. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 210-0 Introduction to Asian American Studies (1 Unit)** Origins of the field, emerging trajectories, core concepts, theories and methodologies. Analyzes race, gender, immigration, diaspora, class, labor, and sexuality as primary subjects of the field. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 214-0 Asian American History (1 Unit)** Introduction to the history of Asians in the United States, with a focus on their impact on American society as well as their experiences within the United States. ASIAN\_AM 214-0 and HISTORY 214-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**ASIAN\_AM 216-0 Global Asians (1 Unit)** Survey of Asian diasporas in the United States and elsewhere in the 19th and 20th centuries, emphasizing causes of migration, process of settlement, relations with other ethnic groups, and construction of diasporic identities. ASIAN\_AM 216-0 and HISTORY 216-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**ASIAN\_AM 218-0 Asian/Black Historical Relations in the U.S. (1 Unit)** Comparative historical analysis of relations of these groups in the United States, including racialized and sexualized discourses structuring

interracial relations and social, political, and economic location. Slavery, immigration, model minority myth, cross-racial politics. BLK\_ST 218-0 and ASIAN\_AM 218-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules* (p. 216) *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ASIAN\_AM 220-0 Topics in History (1 Unit)** Exploration of theme, event, region, or historical period, with emphasis on historical interpretation. May be repeated for credit with a different topic. *Historical Studies Distro Area*

**ASIAN\_AM 225-0 Asian American Communities (1 Unit)** Critical examination of post-1965 Asian American communities in light of demographic, social, racial, and economic trends in the United States and Asia. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 235-0 Language in Asian America (1 Unit)** Survey of linguistic anthropological topics relevant to Asian American communities, including bilingualism, code switching, language socialization, language shift, style, sociolinguistic variation, indexicality, media, and semiotics. ANTHRO 235-0 and ASIAN\_AM 235-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**ASIAN\_AM 247-0 Asian Americans and Popular Culture (1 Unit)** Examination of the varied roles of Asian Americans in U.S. popular culture, from representations to cultural production, historically and today. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ASIAN\_AM 251-0 Introduction to Critical Mixed Race Studies (1 Unit)** Exploration of demographic trends in interracial and interethnic marriages to highlight the complexity of the American experience. Special attention to mixed-race experiences portrayed in film and novels. BLK\_ST 251-0 and ASIAN\_AM 251-0 are taught together; students may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**ASIAN\_AM 275-0 Introduction to Asian American Literature (1 Unit)** Introduction to Asian American literature from the late 19th century to the present, covering a range of genres and ethnicities. ASIAN\_AM 275-0 and ENGLISH 275-0 are taught together; may not receive credit for both courses. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ASIAN\_AM 276-0 Topics in Literary and Cultural Studies (1 Unit)** Close study of Asian American literary and cultural texts within a theme, genre, or other organizing criterion. May be repeated for credit with a different topic. ASIAN\_AM 276-0 and ENGLISH 276-0 are taught together. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ASIAN\_AM 303-0 Advanced Topics in Social and Cultural Analysis (1 Unit)** Detailed exploration of an issue and its ramifications in Asian American society and culture. May be repeated for credit with a different topic. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 304-0 Asian American Women's History (1 Unit)** Exploration of race, gender, and the contours of US history from the perspective of Asian American women's experiences. Considers migration, exclusion, labor, marriage, family, sexuality, and cross-racial alliances. ASIAN\_AM 304-0 and HISTORY 304-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**ASIAN\_AM 310-0 Contemporary Asian Black Relations (1 Unit)** Divides between these groups, as well as areas of positive cross-cultural collaboration. Historical analysis of reparations, the 1992 Los Angeles riots, and affirmative action. Cross-racial exchange in youth expressions, popular culture, hip-hop. BLK\_ST 310-0 and ASIAN\_AM 310-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area*

**ASIAN\_AM 320-0 Advanced Topics in History (1 Unit)** Close study of Asian American history within a theme, event, or other organizing criterion, with emphasis on primary documents, historical interpretation, and research. May be repeated for credit with a different topic. *Historical Studies Distro Area*

**ASIAN\_AM 350-0 Asian American Religions (1 Unit)** Analysis of the role of religion in Asian American communities; how experiences as immigrants and as racial and ethnic minorities shape religious practices, communities, theologies, and identities. *Ethics Values Distro Area Interdisciplinary Distro - See Rules* (p. 216) *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 360-0 Advanced Topics in Sexuality, Gender, and Race (1 Unit)** Exploration of the intersections of gender, race, and sexuality, the construction of masculinity and femininity, and the role of gender and sexuality in the life experiences of Asian Americans. May be repeated for credit with a different topic. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 365-0 Language, Race, and Ethnicity in the U.S. (1 Unit)** Analysis of connections between language ideologies, language use, and meanings of race and ethnicity. Bilingualism, immigration, identity, accented English, African American English, language policy, English only movement, education, social change. ASIAN\_AM 365-0 and ANTHRO 365-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 370-0 Advanced Topics in Diaspora (1 Unit)** Exploration of the ideas of diaspora and homeland and their implications for rethinking immigration and migration as they relate to the experiences of Asian Americans. May be repeated for credit with a different topic. *Social Behavioral Sciences Distro Area*

**ASIAN\_AM 376-0 Advanced Topics in Literature and Culture (1 Unit)** Close study of Asian American literary and cultural texts within a theme, genre, or other organizing criterion, with an emphasis on theory and its application. May be repeated for credit with a different topic. *Literature Fine Arts Distro Area*

**ASIAN\_AM 377-0 War and Empire (1 Unit)** Examination of US-Asia connections through history and representations of US wars in cultural and historical texts. *Literature Fine Arts Distro Area*

**ASIAN\_AM 380-0 Advanced Topics in Arts and Performance (1 Unit)** Analysis of Asian American contributions to the art, visual culture, and film of the U.S. Exploration of the dynamics of race, gender, and class in Asian American dance, theater, film, art, and visual culture. May be repeated for credit with different topic. *Literature Fine Arts Distro Area*

**ASIAN\_AM 392-0 Advanced Seminar for Majors and Minors (1 Unit)** Seminar on a topic in areas related to Asian American social structure and culture. May be repeated for credit with different topic.

**ASIAN\_AM 399-0 Independent Study In Asian American Studies (1 Unit)** Readings and conferences on special subjects for students pursuing areas of interest in Asian American studies.

## Asian American Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Program Courses (12 units)</b>	
ASIAN_AM 210-0	Introduction to Asian American Studies
3 additional 200-level courses	
ASIAN_AM 392-0	Advanced Seminar for Majors and Minors (typically taken junior year.)
5 additional 300-level courses, including least one ASIAN_AM 399-0 linked to the Senior Project.	
2 additional courses at either the 200- or 300-level.	
<b>Related Courses (1 unit)</b>	
1 course outside of Asian American Studies that explicitly focuses on race, ethnicity, and indigeneity in the frame of US empire. Contact the DUS if you would like to know in advance if a course will count.	

## Senior Project

- Senior Projects must be approved in advance by the Director of Undergraduate Studies or major adviser and require an AASP faculty mentor.
- Students must take at least one ASIAN\_AM 399-0 course for supervised reading and writing of their senior essay or senior thesis with a faculty advisor. Up to two units of ASIAN\_AM 399-0 can be counted toward the major.
- Juniors who take ASIAN\_AM 392-0 to develop a research project can repeat it for credit as seniors, expecting to work on their senior thesis or senior essay. Up to two units of ASIAN\_AM 392-0 may be counted towards the major.
- The Senior Project, which culminates in a senior essay or senior thesis (see DUS for required length and other criteria), can take the form of an advanced research project, an in-depth community engagement project like an internship or substantial volunteer work, or course work specified below. Options include:
  - Senior thesis in Asian American Studies.
  - Independently proposed research project and senior essay.
  - Independently proposed internship at an Asian American community organization or other nonprofit whose work involves Asian American issues, and a senior essay.
  - Pre-approved study abroad courses on Asian diasporas, and a senior essay.
  - Chicago Field Studies (p. 267) in a field related to Asian American Studies, and a senior essay.

## Honors in Asian American Studies

To qualify for honors, a student must demonstrate consistently high performance in the major and complete a major research project during the senior year, selecting a thesis adviser from among core and affiliated faculty. Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more

information see the director of undergraduate studies or program director. Also see Honors in the Major (p. 222).

## Asian American Studies Minor

Course	Title
<b>Minor Requirements (7 units)</b>	
ASIAN_AM 210-0	Introduction to Asian American Studies
5 additional courses in Asian American Studies.	
One course outside of Asian American Studies that explicitly focuses on race, ethnicity, and indigeneity in the frame of US empire. Contact the DUS if you would like to know in advance if a course will count.	

## Asian Languages and Cultures

[alc.northwestern.edu](http://alc.northwestern.edu)

The Department of Asian Languages and Cultures focuses on Asian humanities and languages past and present. Its courses provide students with opportunities to attain linguistic and transcultural competence in one or more of four language areas and to better appreciate Asia as a dynamic site of cultural and linguistic interaction.

The department offers a major in Asian languages and cultures with five areas of focus (Chinese, Hindi-Urdu, Japanese, Korean, and comparative), as well as two minors: The Advanced Asian Languages Minor (formerly the Asian Languages Minor), which emphasizes language training while allowing students to learn more about the culture of their area of linguistic focus (Chinese, Hindi-Urdu, Japanese, Korean), and the Asian Humanities Minor, which allows students explore interdisciplinary perspectives on the Asian humanities without additional language training. Students majoring in Asian Languages and Cultures (non Comparative tracks) may also earn an Advanced Asian Languages Minor in a separate Asian language or an Asian Humanities Minor, provided they do not double-count courses toward both the major and the minor.

When they graduate, Asian Languages and Cultures majors and Advanced Asian Languages minors will have proficiency in the four core skills of speaking, listening, reading, and writing in an Asian language. They should be able to understand spoken language in conversations and a variety of media; read literature, newspapers, and magazines; and speak and write in formal and informal language. In addition to these core linguistic skills, students will gain sophisticated understanding of the culture of their area or region of focus. Cultural literacy includes knowledge of classical and modern literary texts and visual culture; the ability to analyze and interpret texts orally and in writing; understanding and experience of cultural practices; and the ability to conduct independent research.

Students are encouraged to study abroad, though it is important that they consult with both the study abroad coordinator for their area as well as the director of undergraduate studies before leaving Northwestern.

## Language Curricula

The Department of Asian Languages and Cultures offers Chinese, Hindi-Urdu, Japanese, and Korean language courses from beginning through advanced levels.

### Chinese Language

General language courses are offered in two tracks – the regular and the accelerated tracks. The accelerated track is designed for students with uneven language skills – They have some speaking proficiency but

limited or no reading and/or writing proficiency. The accelerated track typically serves heritage language learners, but other students with a similar linguistic profile may be placed into the track. The two tracks are separate, and students cannot move between the tracks. In addition to general language courses, business Chinese courses are also offered at the intermediate to advanced levels.

### **Regular Track**

Courses listed in the same row are year-long sequence, which starts in the fall quarter. Students who have completed CHINESE 311-1,2,3 may move to CHINESE 315 in the accelerated track.

Course	Title
CHINESE 111-1	Chinese I
& CHINESE 111-2	and Chinese I
& CHINESE 111-3	and Chinese I
CHINESE 121-1	Chinese II
& CHINESE 121-2	and Chinese II
& CHINESE 121-3	and Chinese II
CHINESE 211-1	Chinese III
& CHINESE 211-2	and Chinese III
& CHINESE 211-3	and Chinese III
CHINESE 311-1	Chinese IV: Formal Speaking
CHINESE 311-2	Chinese IV: Formal Writing
CHINESE 311-3	Chinese IV: Formal Reading
CHINESE 399-0	Independent Study

### **Accelerated Track**

Courses listed in the same row are year-long sequence, which starts in the fall quarter.

Course	Title
CHINESE 115-1	Chinese I - Accelerated
& CHINESE 115-2	and Chinese I - Accelerated
& CHINESE 115-3	and Chinese I - Accelerated
CHINESE 125-1	Chinese II - Accelerated
& CHINESE 125-2	and Chinese II - Accelerated
& CHINESE 125-3	and Chinese II - Accelerated
CHINESE 215-1	Chinese III - Accelerated
& CHINESE 215-2	and Chinese III - Accelerated
& CHINESE 215-3	and Chinese III - Accelerated
CHINESE 315-1	Chinese IV - Accelerated: Formal Writing and Public Speaking
CHINESE 315-2	Chinese IV - Accelerated: Advanced Reading and Writing
CHINESE 315-3	Chinese IV - Accelerated: Media & Society
CHINESE 320-0	Chinese V: Special Topics in Advanced Chinese
CHINESE 399-0	Independent Study

### **Business Chinese**

Course	Title
CHINESE 212-0	Chinese in Business Practice 1
CHINESE 312-1	Chinese in Business Practice 2
CHINESE 312-2	Multinational Corporations in China

### **Hindi-Urdu Language**

All students taking classes in the Hindi-Urdu Language Program will learn to read and write both the Devanagari and Nastaliq scripts, and grammar and vocabulary common to both as well as specific to each.

Courses listed in the same row are year-long sequence, which starts in the fall quarter.

Course	Title
HIND_URD 111-1	Hindi-Urdu I
& HIND_URD 111-2	and Hindi-Urdu I
& HIND_URD 111-3	and Hindi-Urdu I
HIND_URD 116-0	Accelerated Hindi-Urdu Literacy
HIND_URD 121-1	Hindi-Urdu II
& HIND_URD 121-2	and Hindi-Urdu II
& HIND_URD 121-3	and Hindi-Urdu II
HIND_URD 125-1	Accelerated Beginning Hindi
HIND_URD 125-2	Accelerated Intermediate Hindi
HIND_URD 210-0	Hindi-Urdu III: Topics in Intermediate Hindi-Urdu
HIND_URD 310-0	Hindi-Urdu IV
HIND_URD 320-0	Topics Hindi-Urdu Literature
HIND_URD 399-0	Independent Study

### **Japanese Language**

Courses listed in the same row are year-long sequence, which starts in the fall quarter.

Course	Title
JAPANESE 111-1	Japanese I
& JAPANESE 111-2	and Japanese I
& JAPANESE 111-3	and Japanese I
JAPANESE 121-1	Japanese II
& JAPANESE 121-2	and Japanese II
& JAPANESE 121-3	and Japanese II
JAPANESE 211-1	Japanese III
& JAPANESE 211-2	and Japanese III
& JAPANESE 211-3	and Japanese III
JAPANESE 310-0	Japanese IV: Special Topics in Reading Japanese Literature in Japanese
JAPANESE 311-1	Japanese IV: Reading Modern Japanese Literature in Japanese
JAPANESE 312-1	Japanese IV: Contemporary Japanese Literary Works for Reading & Discussion
JAPANESE 313-1	Japanese IV: Japanese Newspaper Reading and News Listening
JAPANESE 314-1	Japanese IV: Japanese Essay Writing
JAPANESE 399-0	Independent Study

### **Korean Language**

Courses listed in the same row are year-long sequence, which starts in the fall quarter.

Course	Title
KOREAN 111-1	Korean I
& KOREAN 111-2	and Korean I
& KOREAN 111-3	and Korean I
KOREAN 121-1	Korean II
& KOREAN 121-2	and Korean II
& KOREAN 121-3	and Korean II
KOREAN 125-1	Korean II - Accelerated
& KOREAN 125-2	and Korean II - Accelerated
KOREAN 211-1	Korean III
& KOREAN 211-2	and Korean III
& KOREAN 211-3	and Korean III
KOREAN 311-1	Korean IV: Readings in Korean Literature
KOREAN 311-2	Korean IV: Korean through Movies
KOREAN 311-3	Korean IV: Topics in the News
KOREAN 399-0	Independent Study

## Programs of Study

- Asian Languages and Cultures Major (p. 248)
- Asian Humanities Minor (p. 249)
- Advanced Asian Languages Minor (p. 249)

## Asian Humanities Courses

These courses are taught in English.

**ASIAN\_LC 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ASIAN\_LC 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ASIAN\_LC 200-0 Introductory Topics in Chinese Literature and Culture (1 Unit)** Introduction to topics in Chinese literature and culture, from precolonial to contemporary periods and contexts. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 202-0 Introduction to Modern Chinese Literature and Culture (1 Unit)** Introduction to topics in the history of cultural production in modern China between the 19th century and present day. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area*

**ASIAN\_LC 204-0 Modern Chinese Popular Culture I (1 Unit)** Introduction to the history of modern Chinese popular cultural production between the mid-19th century and 1949. The course is designed around the introduction and adaptation of four media technologies: photography, film, mass print culture, and sound recording. No prerequisites. *Literature Fine Arts Distro Area*

**ASIAN\_LC 205-0 Modern Chinese Popular Culture II (1 Unit)** Introduction to popular cultural production in Mainland China, Taiwan, and Hong Kong between 1949 and the present. ASIAN\_LC 204-0 is recommended. No prerequisites. *Literature Fine Arts Distro Area*

**ASIAN\_LC 220-0 Introductory Topics in Japanese Literature and Culture (1 Unit)** Introduction to topics in Japanese literature and culture, from premodern to contemporary periods. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area*

**ASIAN\_LC 221-0 Introduction to Premodern Japanese Literature and Culture (1 Unit)** Introduction to Japanese literature and culture from the earliest writings to the dawn of the modern era (8th-19th c.): poetry, narrative fiction, essays, diaries, theater. Focus is on reading literary texts in historical context. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 222-0 Introduction to Modern Japanese Literature and Culture (1 Unit)** Introduction to Japanese literature, thought, and culture from the mid-19th to mid-20th century: fiction, poetry, theater, essays. Focus is on reading literary texts in relation to historical context. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 223-0 Introduction to Contemporary Japanese Literature and Culture (1 Unit)** Introduction to Japanese literature, thought, and culture from the mid-20th to early 21st century: fiction, poetry, theater,

essays, animation, manga. Focus is on reading literary texts in relation to historical context. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 224-0 Introduction to Japanese Film, Media, and Visual Culture (1 Unit)** Introduction to Japanese media and visual culture. Topics may include: pre-modern visual narrative, pre-modern print culture, cinema, animation, manga, video games. Focus is on reading media and visual culture in relation to historical context. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 240-0 Introductory Topics in Korean Literature and Culture (1 Unit)** Introduction to topics in Korean literature and culture, from precolonial to contemporary periods and contexts. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 260-0 Introductory Topics in South Asian Literature and Culture (1 Unit)** Introduction to topics in South Asian literature and culture, from precolonial to contemporary periods and contexts. May be repeated with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 261-0 South Asian Popular Cultures (1 Unit)** This course offers an introduction to the intersecting worlds of popular literature, digital media, folk arts, performance, and politics of South Asia with a focus on the relationship between artistic expression, social reform and political change. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 265-0 South Asian Cinemas (1 Unit)** Narrative and aesthetic approaches to understanding popular cinemas in South Asia with special attention to historical, local, and global contexts. May be repeated for credit with change of topic. No prerequisites. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 290-0 Introductory Topics in Asian Languages and Cultures (1 Unit)** Content and prerequisites vary. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 300-0 Advanced Topics in Chinese Literature and Culture (1 Unit)**

Advanced study and analysis of topics in Chinese literature and culture, from precolonial to contemporary periods and contexts. May be repeated for credit with change of topic. One 200-level Chinese literary and culture studies course is recommended. No prerequisites.

*Advanced Expression Global Perspectives on Power, Justice, and Equity  
Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 320-0 Advanced Topics in Japanese Literature and Culture (1 Unit)**

Advanced study of topics in Japanese literature and culture, from premodern to contemporary periods and contexts. May be repeated for credit with change of topic. One 200-level Japanese literary and culture studies course is recommended. No prerequisites.

*Literature Fine Arts Distro Area*

**ASIAN\_LC 321-0 Advanced Topics in Premodern Japanese Literature and Culture (1 Unit)**

In-depth examination of specialized topics in premodern Japanese literature and culture. Emphasis on reading, evaluating, and applying scholarship in Japanese studies to inform analysis of primary texts. May be repeated for credit with change of topic. No prerequisites.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 322-0 Advanced Topics in Modern and Contemporary Japanese Literature and Culture (1 Unit)**

Advanced study in topics related to Japanese literature and culture from the late 19th century to the present. Topics may include, but are not limited to: significant cultural movements in specific historical periods, wartime literature and culture, minority literatures, and major authors and texts. Focus is on interpreting literature and culture in relation to historical contexts and theoretical concerns. May be repeated for credit with change of topic. No prerequisites.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 340-0 Advanced Topics in Korean Literature and Culture (1 Unit)**

Advanced study and analysis of topics in Korean literature and culture, from precolonial to contemporary periods and contexts. May be repeated for credit with change of topic. ASIAN\_LC 240 is recommended. No prerequisites.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 360-0 Advanced Topics in South Asian Languages and Cultures (1 Unit)**

Advanced study and analysis of topics in South Asian Literature and Culture, from precolonial to contemporary periods and contexts. Includes a research component. May be repeated for credit with change in topic. One 200-level South Asian literary and culture studies course is recommended. No prerequisites.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 370-0 Literary Cultures in South Asia (1 Unit)**

Advanced study of specific literary cultures in South Asia, and their impacts on South Asian history and contemporary society. Topics vary in historical, regional, and thematic scope. No prerequisite, but a 200-level ASIAN\_LC topics courses is recommended. May be repeated for credit with change of topic. One 200-level South Asian literary and culture studies course is recommended. No prerequisites.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 373-0 Religious and Textual Traditions in South Asia (1 Unit)**

Explores the close relationship between religious practice and belief and literary traditions (Hindu, Muslim, Buddhist, etc.) in South Asia from classical to contemporary periods. Topics vary; may be repeated for credit with a change in topic. One 200-level South Asian literary and culture studies course is recommended. No prerequisites.

*Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 375-0 South Asian Societies (1 Unit)**

This class will examine how significant moments of social and political transformation (such as colonialism, Partition, and the growth of the South Asian diaspora) has been engaged in literature and popular culture. Content varies; a 200-level course in an area of South Asian literature and culture is recommended. May be repeated for credit with change of topic. No prerequisites.

*Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 390-0 Advanced Topics in Asian Languages and Cultures (1 Unit)**

Content and prerequisites vary. May be repeated for credit with change of topic.

*Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline***ASIAN\_LC 392-0 Advanced Studies in Asian Film, Media, and Visual Culture (1 Unit)**

Advanced topics in Asian film, media, and visual culture. May be repeated for credit with change of topic. Prerequisite: ASIAN\_LC 202-0 or ASIAN\_LC 204-0 or ASIAN\_LC 205-0 or ASIAN\_LC 224-0 or ASIAN\_LC 265-0 (C- or better); or consent of instructor. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ASIAN\_LC 393-0 Asian Environmental Humanities (1 Unit)**

Topics in the study of environment and culture in Asian contexts. Content varies; may be repeated for credit with change of topic. One 200-level Asian LC course is recommended.

Prerequisite: Consent of instructor.

*Global Perspectives on Power, Justice, and Equity Literature and Arts Foundational Discipline***ASIAN\_LC 394-0 Space and Place in Asian Literatures and Cultures (1 Unit)**

Advanced undergraduate course examining representations of space and place in Asian cultural contexts, with focus on application of theoretical methods to primary texts. May be repeated for credit with change of topic. One 200-level Asian literary and culture studies course is recommended. No prerequisites.

*Literature Fine Arts Distro Area***ASIAN\_LC 395-0 Genre in Asian Literatures (1 Unit)**

Advanced undergraduate course examining the place of genre in Asian literary traditions. May be repeated for credit with change of topic. One 200-level Asian literary and culture studies course is recommended. No prerequisites.

*Literature Fine Arts Distro Area***ASIAN\_LC 397-0 Research Seminar (1 Unit)** A research seminar in Asian Languages and Cultures, usually taken in the junior or senior year. Prerequisite: consent of the instructor.

**ASIAN\_LC 399-0 Independent Study (1 Unit)** The independent study is designed for advanced undergraduates interested in studying topics not otherwise covered in normal ALC courses. Prerequisite: consent of director of undergraduate studies and instructor.

## Language Courses

All students with prior knowledge of any of the languages offered must take the departmental placement test before registering for their first course in that language. A student must pass each language course with grade of C- or above to enroll in the next course in sequence.

## Chinese Language Courses

**CHINESE 111-1 Chinese I (1 Unit)** First-quarter course of the beginning college-level sequence to develop basic literacy and oral proficiency in Chinese.

**CHINESE 111-2 Chinese I (1 Unit)** Second-quarter course of the beginning college-level sequence to develop basic literacy and oral proficiency in Chinese. Prerequisite: grade of at least C- in CHINESE 111-1 or equivalent.

**CHINESE 111-3 Chinese I (1 Unit)** Third-quarter course of the beginning college-level sequence to develop basic literacy and oral proficiency in Chinese. Prerequisite: grade of at least C- in CHINESE 111-2 or equivalent.

**CHINESE 115-1 Chinese I - Accelerated (1 Unit)** First-quarter course of the accelerated beginning college-level sequence to develop basic literacy and oral proficiency in Chinese. Prerequisite: consent of department.

**CHINESE 115-2 Chinese I - Accelerated (1 Unit)** Second-quarter course of the accelerated beginning college-level sequence to develop basic literacy and oral proficiency in Chinese. Prerequisite: grade of at least C- in CHINESE 115-1 or equivalent.

**CHINESE 115-3 Chinese I - Accelerated (1 Unit)** Third-quarter course of the accelerated beginning college-level sequence to develop basic literacy and oral proficiency in Chinese. Prerequisite: grade of at least C- in CHINESE 115-2 or equivalent.

**CHINESE 121-1 Chinese II (1 Unit)** First-quarter course of the second-year Chinese sequence to further develop basic literacy and oral proficiency. Prerequisite: grade of at least C- in CHINESE 111-3 or equivalent.

**CHINESE 121-2 Chinese II (1 Unit)** Second-quarter course of the second-year Chinese sequence to further develop basic literacy and oral proficiency. Prerequisite: grade of at least C- in CHINESE 121-1 or equivalent.

**CHINESE 121-3 Chinese II (1 Unit)** Third-quarter course of the second-year Chinese sequence to further develop basic literacy and oral proficiency. Prerequisite: grade of at least C- in CHINESE 121-2 or equivalent.

**CHINESE 125-1 Chinese II - Accelerated (1 Unit)** First-quarter course of the accelerated intermediate-level sequence with emphasis on reading and writing. Prerequisite: grade of at least C- in CHINESE 115-3 or equivalent.

**CHINESE 125-2 Chinese II - Accelerated (1 Unit)** Second-quarter course of the accelerated intermediate-level sequence with emphasis on reading and writing. Prerequisite: grade of at least C- in CHINESE 125-1 or equivalent.

**CHINESE 125-3 Chinese II - Accelerated (1 Unit)** Third-quarter course of the accelerated intermediate-level sequence with emphasis on reading and writing. Prerequisite: grade of at least C- in CHINESE 125-2 or equivalent.

**CHINESE 211-1 Chinese III (1 Unit)** First-quarter course of the intermediate-level sequence to further develop literacy and oral proficiency. Prerequisite: grade of at least C- in CHINESE 121-3 or equivalent.

**CHINESE 211-2 Chinese III (1 Unit)** Second-quarter course of the intermediate-level sequence to further develop literacy and oral proficiency. Prerequisite: grade of at least C- in CHINESE 211-1 or equivalent.

**CHINESE 211-3 Chinese III (1 Unit)** Third-quarter course of the intermediate-level sequence to further develop literacy and oral proficiency. Prerequisite: grade of at least C- in CHINESE 211-2 or equivalent.

**CHINESE 212-0 Chinese in Business Practice 1 (1 Unit)** Basic business Chinese focused on professional settings. For students interested in using business-related texts to learn Chinese or aspiring to China-focused careers. Prerequisite: grade of at least C- in CHINESE 125-2, CHINESE 211-2 or equivalent.

**CHINESE 215-1 Chinese III - Accelerated (1 Unit)** First-quarter course of the accelerated intermediate toward advanced-level sequence with emphasis on formal speaking and writing. Prerequisite: grade of at least C- in CHINESE 125-3 or equivalent.

**CHINESE 215-2 Chinese III - Accelerated (1 Unit)** Second-quarter course of the accelerated intermediate toward advanced-level sequence with emphasis on formal speaking and writing. Prerequisite: grade of at least C- in CHINESE 215-1 or equivalent.

**CHINESE 215-3 Chinese III - Accelerated (1 Unit)** Third-quarter course of the accelerated intermediate toward advanced-level sequence with emphasis on formal speaking and writing. Prerequisite: grade of at least C- in CHINESE 215-2 or equivalent.

**CHINESE 311-1 Chinese IV: Formal Speaking (1 Unit)** Development of skills in speaking formal Chinese. Prerequisite: grade of at least C- in CHINESE 211-3 or CHINESE 212-0, or equivalent.

**CHINESE 311-2 Chinese IV: Formal Writing (1 Unit)** Development of skills in writing formal Chinese. Prerequisite: grade of at least C- in CHINESE 211-3 or CHINESE 212-0, or equivalent.

**CHINESE 311-3 Chinese IV: Formal Reading (1 Unit)** Development of skills in reading different types of authentic Chinese works. Prerequisite: grade of at least C- in CHINESE 211-3 or CHINESE 212-0, or equivalent.

**CHINESE 312-1 Chinese in Business Practice 2 (1 Unit)** Training for professional tasks using Chinese. Especially for students who completed CHINESE 212-0 or aspire to China-focused careers or to becoming multi-proficient business professionals. Prerequisite: grade of at least C- in CHINESE 125-3, CHINESE 211-3, CHINESE 212-0 or equivalent.

**CHINESE 312-2 Multinational Corporations in China (1 Unit)** Training in business reading skills, with a focus on case studies, and speaking/writing skills for discussing business topics professionally. Designed for students interested in China's economic development and using Chinese in their careers. Prerequisite: grade of at least C- in CHINESE 125-3, CHINESE 211-3, CHINESE 212-0 or equivalent.

**CHINESE 315-1 Chinese IV - Accelerated: Formal Writing and Public Speaking (1 Unit)** Development of academic writing and speaking in Chinese. Prerequisite: grade of at least C- in CHINESE 215-3; or in three of the following: CHINESE 311-1, CHINESE 311-2, CHINESE 311-3, CHINESE 312-1, CHINESE 312-2.

**CHINESE 315-2 Chinese IV - Accelerated: Advanced Reading and Writing (1 Unit)** Development of academic reading and writing in Chinese. Prerequisite: grade of at least C- in CHINESE 215-3; or in three of the following: CHINESE 311-1, CHINESE 311-2, CHINESE 311-3, CHINESE 312-1, CHINESE 312-2.

**CHINESE 315-3 Chinese IV - Accelerated: Media & Society (1 Unit)** Development of skills in reading primary sociocultural sources. Prerequisite: grade of at least C- in CHINESE 215-3; or in three of the following: CHINESE 311-1, CHINESE 311-2, CHINESE 311-3, CHINESE 312-1, CHINESE 312-2.

**CHINESE 320-0 Chinese V: Special Topics in Advanced Chinese (1 Unit)** Standalone topics course using films, audiovisual materials, and texts in primary sources to develop ability to analyze diverse textual logic, language patterns, and cultural features. May be repeated for credit with change of topic. Prerequisite: grade of at least C- in three of CHINESE 315-1, CHINESE 315-2, CHINESE 315-3 or equivalent.

**CHINESE 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Chinese. Prerequisite: consent of department.

## Hindi-Urdu Language Courses

**HIND\_URD 111-1 Hindi-Urdu I (1 Unit)** Beginning college-level sequence to develop basic literacy and oral proficiency in Hindi-Urdu. Devanagari script only. Prerequisite - none.

**HIND\_URD 111-2 Hindi-Urdu I (1 Unit)** Beginning college-level sequence to develop basic literacy and oral proficiency in Hindi-Urdu. Devanagari script only. Prerequisite: grade of at least C- in HIND\_URD 111-1 or equivalent.

**HIND\_URD 111-3 Hindi-Urdu I (1 Unit)** Beginning college-level sequence to develop basic literacy and oral proficiency in Hindi-Urdu. Devanagari script only. Prerequisite: grade of at least C- in HIND\_URD 111-2 or equivalent.

**HIND\_URD 116-0 Accelerated Hindi-Urdu Literacy (1 Unit)** One-quarter course for speakers of Hindi-Urdu with no literacy skills. Devanagari and Nastaliq scripts; broad overview of Hindi-Urdu grammar. Prerequisite: consent of instructor.

**HIND\_URD 121-1 Hindi-Urdu II (1 Unit)** Intermediate-level sequence developing literacy and oral proficiency in Hindi-Urdu. Devanagari and Nastaliq scripts. Prerequisite: grade of at least C- in HIND\_URD 111-3 or equivalent.

**HIND\_URD 121-2 Hindi-Urdu II (1 Unit)** Intermediate-level sequence developing literacy and oral proficiency in Hindi-Urdu. Devanagari and Nastaliq scripts. Prerequisite: grade of at least C- in HIND\_URD 121-1 or equivalent.

**HIND\_URD 121-3 Hindi-Urdu II (1 Unit)** Intermediate-level sequence developing literacy and oral proficiency in Hindi-Urdu. Devanagari and Nastaliq scripts. Prerequisite: grade of at least C- in HIND\_URD 121-2 or equivalent.

**HIND\_URD 125-1 Accelerated Beginning Hindi (1 Unit)** Intensive Hindi language course covers one year of college level Hindi language curriculum in one quarter. Prerequisites: HIND\_URD 116-0 OR ability to speak and understand basic Hindi-Urdu AND limited reading-writing skills in the Devanagari/Hindi script (proficiency test/permission of the instructor).

**HIND\_URD 125-2 Accelerated Intermediate Hindi (1 Unit)** Intensive one quarter long Hindi language course covers an equivalent of the second year of college level Hindi language curriculum. Prerequisites: HIND\_URD 125-1 OR placement test (requires permission of instructor).

**HIND\_URD 210-0 Hindi-Urdu III: Topics in Intermediate Hindi-Urdu (1 Unit)** A series of independent intermediate Hindi-Urdu courses, developing proficiency through readings and discussions. Devanagari and/or Nastaliq script. May be repeated for credit with change of topic. Prerequisite: Grade of at least C- in HIND\_URD 121-3 or equivalent.

**HIND\_URD 310-0 Hindi-Urdu IV (1 Unit)** Standalone course focused on literature and culture. Emphasis on reading, writing about, and discussing literary culture. May be repeated for credit with change of topic. Prerequisite: 3 iterations of HIND\_URD 210-0 (minimum grade C-) or equivalent.

#### **HIND\_URD 320-0 Topics Hindi-Urdu Literature (1 Unit)**

Hindi-Urdu literature. Cultural and historical dimensions of South Asian literature. May be repeated for credit with a different topic.

Prerequisites: 2 300-level courses in Hindi-Urdu or equivalent. Proficiency in reading Hindi or Urdu script is required.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**HIND\_URD 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Hindi Urdu. Prerequisite: consent of department.

## **Japanese Language Courses**

**JAPANESE 111-1 Japanese I (1 Unit)** First-quarter course of the beginning college-level sequence to develop basic literacy and oral proficiency in Japanese. This course introduces the Hiragana and Katakana syllabaries and Kanji (Chinese characters).

**JAPANESE 111-2 Japanese I (1 Unit)** Second-quarter course of the beginning college-level sequence to develop basic literacy and oral proficiency in Japanese. Prerequisite: grade of at least C- in JAPANESE 111-1 or equivalent.

**JAPANESE 111-3 Japanese I (1 Unit)** Third-quarter course of the beginning college-level sequence to develop basic literacy and oral proficiency in Japanese. Prerequisite: grade of at least C- in JAPANESE 111-2 or equivalent.

**JAPANESE 121-1 Japanese II (1 Unit)** First-quarter course of the college-level second-year Japanese to further develop basic literacy and oral proficiency. Prerequisite: grade of at least C- in JAPANESE 111-3 or equivalent.

**JAPANESE 121-2 Japanese II (1 Unit)** Second-quarter course of the college-level second-year Japanese to further develop basic literacy and oral proficiency. Prerequisite: grade of at least C- in JAPANESE 121-1 or equivalent.

**JAPANESE 121-3 Japanese II (1 Unit)** Third-quarter course of the college-level second-year Japanese to further develop basic literacy and oral proficiency. Prerequisite: grade of at least C- in JAPANESE 121-2 or equivalent.

**JAPANESE 211-1 Japanese III (1 Unit)** First-quarter course of the intermediate-level sequence to further develop literacy and oral proficiency. Focus on social and cultural issues and language for discussing them. Prerequisite: grade of at least C- in JAPANESE 121-3 or equivalent.

**JAPANESE 211-2 Japanese III (1 Unit)** Second-quarter course of the intermediate-level sequence to further develop literacy and oral proficiency. Focus on social and cultural issues and language for discussing them. Prerequisite: grade of at least C- in JAPANESE 211-1 or equivalent.

**JAPANESE 211-3 Japanese III (1 Unit)** Third-quarter course of the intermediate-level sequence to further develop literacy and oral proficiency. Focus on social and cultural issues and language for discussing them. Prerequisite: grade of at least C- in JAPANESE 211-2 or equivalent.

#### **JAPANESE 310-0 Japanese IV: Special Topics in Reading Japanese Literature in Japanese (1 Unit)**

Reading of original texts of Japanese literature, criticism, and nonfiction focused on particular themes. Translation skills are emphasized; discussion in English.

Prerequisite: grade of at least C- in JAPANESE 211-3 or equivalent.

*Literature Fine Arts Distro Area*

**JAPANESE 311-1 Japanese IV: Reading Modern Japanese Literature in Japanese (1 Unit)** Focus on learning pre-1946 orthography and reading of original texts of modern short stories. Translation skills are emphasized; discussion in English. Prerequisite: grade of at least C- in JAPANESE 211-3 or equivalent.

**JAPANESE 312-1 Japanese IV: Contemporary Japanese Literary Works for Reading & Discussion (1 Unit)** Focus on reading contemporary Japanese poems, essays, short stories, and novels; discussion in Japanese. Prerequisite: grade of at least C- in JAPANESE 211-3 or equivalent.

**JAPANESE 313-1 Japanese IV: Japanese Newspaper Reading and News Listening (1 Unit)**

**Focus on reading Japanese newspaper articles and debating in Japanese the issues discussed. Develops news listening skills.** Prerequisite: grade of at least C- in JAPANESE 211-3 or equivalent.

**JAPANESE 314-1 Japanese IV: Japanese Essay Writing (1 Unit)**

**Focus on refining writing skills-narrative, descriptive, persuasive, and argumentative.** Review of grammar and expressions through writing clinics. Prerequisite: grade of at least C- in JAPANESE 211-3 or equivalent.

**JAPANESE 399-0 Independent Study (1 Unit)**

For students who have advanced with distinction beyond the regular course offerings in Japanese. Prerequisite: consent of department.

## Korean Language Courses

**KOREAN 111-1 Korean I (1 Unit)**

First-quarter course of the beginning college-level sequence to develop basic four language skills in Korean.

**KOREAN 111-2 Korean I (1 Unit)**

Second-quarter course of the beginning college-level sequence to develop basic four language skills in Korean.

Prerequisite: grade of at least C- in KOREAN 111-1 or equivalent.

**KOREAN 111-3 Korean I (1 Unit)**

Third-quarter course of the beginning college-level sequence to develop basic four language skills in Korean.

Prerequisite: grade of at least C- in KOREAN 111-2 or equivalent.

**KOREAN 121-1 Korean II (1 Unit)**

First-quarter course of the second-year intermediate-level Korean sequence to further develop four language skills in Korean. Prerequisite: grade of at least C- in KOREAN 111-3 or equivalent.

**KOREAN 121-2 Korean II (1 Unit)**

Second-quarter course of the second-year intermediate-level Korean sequence to further develop four language skills in Korean. Prerequisite: grade of at least C- in KOREAN 121-1 or equivalent.

**KOREAN 121-3 Korean II (1 Unit)**

Third-quarter course of the second-year intermediate-level Korean sequence to further develop four language skills in Korean. Prerequisite: grade of at least C- in KOREAN 121-2 or equivalent.

**KOREAN 125-1 Korean II - Accelerated (1 Unit)**

First-quarter course of the accelerated intermediate-level sequence for heritage learners to further develop four language skills. Prerequisite: consent of department.

**KOREAN 125-2 Korean II - Accelerated (1 Unit)**

Second-quarter course of the accelerated intermediate-level sequence for heritage learners to further develop four language skills in Korean. Prerequisite: grade of at least C- in KOREAN 125-1 or equivalent.

**KOREAN 125-3 Korean II - Accelerated (1 Unit)**

Third-quarter course of the accelerated intermediate-level sequence for heritage learners to further develop four language skills in Korean. Prerequisite: Students must have passed Korean 125-2 with at least a C- or be placed in according to placement result.

**KOREAN 211-1 Korean III (1 Unit)**

First-quarter course of the intermediate-toward-advanced level sequence to further develop four language skills in Korean. Prerequisite: grade of at least C- in

KOREAN 121-3, or in KOREAN 125-2, or equivalent.

**KOREAN 211-2 Korean III (1 Unit)**

Second-quarter course of the intermediate-toward-advanced level sequence to further develop four language skills in Korean. Prerequisite: grade of at least C- in

KOREAN 211-1 or equivalent.

**KOREAN 211-3 Korean III (1 Unit)**

Third-quarter course of the intermediate-toward-advanced level sequence to further develop

four language skills in Korean. Prerequisite: grade of at least C- in KOREAN 211-2 or equivalent.

**KOREAN 311-1 Korean IV: Readings in Korean Literature (1 Unit)**

Reading literature in Korean to further develop literacy skills and understanding of Korean culture and society. Prerequisite: grade of at least C- in KOREAN 211-3 or equivalent.

**KOREAN 311-2 Korean IV: Korean through Movies (1 Unit)**

Through Korean films and documentaries, improving oral and writing proficiency, and gaining the knowledge of Korean history, culture, and society. Prerequisite: grade of at least C- in KOREAN 211-3 or equivalent.

**KOREAN 311-3 Korean IV: Topics in the News (1 Unit)**

Through current news, improving oral and writing proficiency and better understanding Korean culture and society. Prerequisite: grade of at least C- in KOREAN 211-3 or equivalent.

**KOREAN 399-0 Independent Study (1 Unit)**

For students who have advanced with distinction beyond the regular course offerings in Korean. Prerequisite: consent of department.

## Asian Languages and Cultures Major

The Asian Languages and Cultures major is designed for students who wish to combine proficiency in an Asian language or languages (Chinese, Hindi-Urdu, Japanese, Korean) with rigorous training in the study of an Asian culture or cultures (China, Japan, Korean, South Asia, or Comparative). In addition to developing the four core linguistic skills (speaking, listening, reading, and writing), students will acquire the cultural literacy necessary for effective communication and sophisticated understanding of at least one cultural sphere or region of Asia. The humanities component of the major is designed to introduce students to advanced methods of critical reading, viewing, interpretation, and academic writing through training in literary studies, film and media studies, gender studies, and cultural studies, among other approaches.

While most Asian Languages and Cultures majors focus on one Asian language and area of focus, the major is also designed to accommodate students who wish to work comparatively within or between regions. For example, students may combine the study of Korean and Japanese language and culture or explore colonial and post-colonial experiences in East and South Asia. Students interested in pursuing a comparative focus will work closely with the director of undergraduate studies to develop a coherent course of study.

Students may apply for (but are not guaranteed) language credit towards the major for courses taken while studying abroad (placement testing upon return is required). Pending departmental review of relevant course materials and the approval of the director of undergraduate studies, up to 2 humanities courses taken while studying abroad may also be counted toward the major. For more information about the review process, please contact the director of undergraduate studies.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
Major Requirements (15 units)	
Prerequisites:	

For students focusing on a single language/area, a first year language course or equivalent proficiency is required. For students working comparatively, there are no prerequisites.

#### **Required Language Courses (6 units):**

3 courses in Chinese, Hindi-Urdu, Japanese or Korean at the second-year level

3 courses in the same language at the third-year level OR 3 courses in an additional Asian language at the first-year level or higher

#### **Humanities Courses (9 units): 200- and 300-level ASIAN\_LC courses**

6 ASIAN\_LC courses selected in consultation with the director of undergraduate studies to represent an area of focus (China, Japan, Korea, South Asia or comparative), of which:

At least 3 must be at the 300-level

At most 2 may be relevant courses from outside the department selected from the list of pre-approved courses or in consultation with the director of undergraduate studies

2 ASIAN\_LC courses from outside the area of focus, selected in consultation with the director of undergraduate studies

1 Senior Seminar (ASIAN\_LC 397-0)

## **Honors in Asian Languages and Cultures**

Majors with a strong academic record (a GPA of 3.5 both in the major and overall) and interest in writing an honors thesis are encouraged to contact the director of undergraduate studies in the spring of their junior year. Students who are approved to write an honors thesis must take two quarters of ASIAN\_LC 399-0 Independent Study in addition to the 15 courses required for the major. For more information, please contact the director of undergraduate studies, review the department's website (<https://www.alc.northwestern.edu>), and see Honors in the Major (p. 222).

## **Asian Humanities Minor**

The Asian Humanities Minor is designed for students who do not require or are unable to pursue extensive language training, but who still wish to make a serious commitment to the study of Asian cultures. Students may choose, in consultation with the director of undergraduate studies, either a geographic area of focus (China, Japan, Korea, South Asia, or Comparative) or a thematic concentration (literary studies, film, media, etc.) to provide focus and depth to their course of study.

In some cases, up to two courses taken abroad may be counted towards the minor with the approval of the director of undergraduate studies and pending departmental review. For more information about the review process, please contact the director of undergraduate studies.

#### **Course Title**

#### **Minor Requirements (7 units)**

#### **Prerequisites:**

None

#### **Required Humanities Courses (7 units)**

7 ASIAN\_LC courses chosen in consultation with the director of undergraduate studies

At least 3 must be at the 300-level

At most 2 may be relevant courses from outside the department selected from the list of pre-approved courses or in consultation with the director of undergraduate studies

## **Advanced Asian Languages Minor**

The Advanced Asian Languages Minor is designed for students who wish to gain a high level of proficiency in an Asian language.

In some cases, language courses taken abroad may be counted towards the minor with the approval of the director of undergraduate studies and pending departmental review. It is essential that students returning from abroad take the language placement exam as soon as possible. For more information about the review process, please contact the director of undergraduate studies. Study abroad credits cannot be counted towards the humanities portion of the minor.

Course	Title
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#### **Minor Requirements (7 units)**

#### **Prerequisites:**

First and second year language courses in area of focus (or equivalent)

#### **Required Language Courses (5 units)**

3 courses in area of focus (Chinese, Hindi-Urdu, Japanese or Korean) at the third-year level

2 courses in the same language at the fourth-year level

#### **Required Humanities Courses (2 units)**

2 ASIAN\_LC courses in area of focus (China, Japan, Korea, South Asia) chosen in consultation with the director of undergraduate studies

## **Astronomy**

See Physics and Astronomy (p. 393).

## **Biological Sciences**

[biosci.northwestern.edu](http://biosci.northwestern.edu)

The science of biology constitutes the study of organisms at all levels of complexity and in all their diversity. The undergraduate major in biological sciences provides a broad, modern curriculum in the life sciences and offers focused concentrations and the potential for laboratory research.

The goal of a major in biological sciences at a research university is to develop and enhance the intellectual and creative potential of life sciences students. To this end, the major includes the following:

- A foundation in mathematics, statistics, chemistry, and physics
- A core curriculum introducing fundamental areas of biological science
- Concentrations that subsequently focus students' interests
- Opportunities to conduct research

In addition to biology courses, students complete the courses listed as related courses (see biological sciences major (p. 253)). First-year students usually complete the general chemistry, calculus, and statistics requirements; in spring quarter, they take BIOL\_SCI 201-0 Molecular Biology.

During the sophomore year, students usually complete the organic chemistry requirement, BIOL\_SCI 202-0 Cell Biology and its co-requisite BIOL\_SCI 232-0 Molecular and Cellular Processes Laboratory, BIOL\_SCI 203-0 Genetics and Evolution and its co-requisite BIOL\_SCI 233-0 Genetics and Molecular Processes Laboratory, BIOL\_SCI 234-0 Investigative Laboratory, and BIOL\_SCI 301-0 Principles of Biochemistry. These core biology courses address the central topics in contemporary biology with a goal of preparing students for further study in either the biological sciences or professional school. The physics requirement may be completed in this or later years.

The junior and senior years permit students to explore a focused area in biological sciences that builds on the principles of the core. There are eight areas of concentration from which to choose. A student's

concentration will be noted on the transcript; only one concentration may be noted. (Biochemistry and Biophysics is not available as a concentration to students also pursuing a Biochemistry track in the Chemistry major. Molecular Neurobiology is not available to students also pursuing a Neuroscience major.)

Once the biological sciences major is declared, students are assigned faculty academic advisers.

Students have the opportunity to conduct a research project in the laboratory of a faculty research supervisor with whom they design a plan of study. The supervisor may be a Northwestern faculty member in any department who is engaging in biological research. Research areas of faculty can be accessed via the biological sciences website.

## The Teaching of Biological Sciences

Weinberg College students pursuing a major in biological sciences who also wish to be certified for secondary teaching must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## Programs of Study

- Biological Sciences Major (p. 253)
- Biological Sciences Second Major for ISP Students (p. 254)

### **BIOL\_SCI 100-0 Introduction to Biological Sciences at Northwestern (1 Unit)**

For participants in Bio&ChemEXCEL summer program. An overview of recent advances in biological research and leadership within the field of biology. Taken with CHEM 100-0.

**BIOL\_SCI 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**BIOL\_SCI 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**BIOL\_SCI 103-0 Diversity of Life (1 Unit)** Comparative survey of organisms, emphasizing adaptation and phylogenetic relationships. Particular emphasis on animals. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**BIOL\_SCI 104-0 Plant-People Interactions (1 Unit)** Biology and history of the interaction of humans and flowering plants. *Natural Sciences Distro Area*

**BIOL\_SCI 109-0 The Nature of Plants (1 Unit)** Plant adaptations for growth, survival, and reproduction. Plant defense against herbivory, pollination, and seed dispersal. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**BIOL\_SCI 115-6 College Seminar (1 Unit)** For participants in the NUBioscientist program. Biological Thought & Action; preparatory to BIOL\_SCI 116-6.

**BIOL\_SCI 116-6 First-Year Writing Seminar (1 Unit)** For participants in the NUBioscientist program. Science Research Preparation; follows BIOL\_SCI 115-6.

**BIOL\_SCI 150-0 Human Genetics (1 Unit)** Basic principles of human inheritance and genetic variation. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**BIOL\_SCI 164-0 Basic Genetics and Evolution (1 Unit)** Principles of inheritance as they apply to evolution. May not receive credit after taking BIOL\_SCI 203-0. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**BIOL\_SCI 201-0 Molecular Biology (1 Unit)** This course focuses on how information is stored and propagated in DNA, and used and regulated to generate proteins at the proper time and location. It also applies this information to understanding fundamentals of biotechnology. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**BIOL\_SCI 201-MG Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in BIOL\_SCI 201-0. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**BIOL\_SCI 201-SG Peer-Guided SG: Molecular Biology (0 Unit)** Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U. Co-requisite: BIOL\_SCI 201-0.

**BIOL\_SCI 202-0 Cell Biology (1 Unit)** This course covers how biomolecules function together to generate the complexity of cells, and how cells behave collectively to communicate with each other and to enact key decisions, such as proliferation and cell death. Prerequisite: Students must have completed, with a C- or better, BIOL\_SCI 201-0 to register for this course. Must be taken concurrently with BIOL\_SCI 232-0. *Natural Sciences Distro Area*

**BIOL\_SCI 202-SG Peer-Guided SG: Cell Biology (0 Unit)** Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U. Co-requisite: BIOL\_SCI 202-0.

**BIOL\_SCI 203-0 Genetics and Evolution (1 Unit)** This course provides an analytic framework for studying the flow of biological information across generations, and understanding how phenotypes reveal biological mechanisms. This framework is applied to development, cancer, the history of life, and mechanisms governing the evolution and distribution of organisms over time. Prerequisite: Students must have completed, with a C- or better, BIOL\_SCI 202-0 to register for this course. Must be taken concurrently with BIOL\_SCI 233-0. *Natural Sciences Distro Area*

**BIOL\_SCI 203-SG Peer-Guided Study Group: Genetics and Evolution (0 Unit)** Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U. Co-requisite: BIOL\_SCI 203-0.

**BIOL\_SCI 213-0 Undergraduate Teaching Assistant (0 Unit)** Prerequisite: consent of instructor.

**BIOL\_SCI 232-0 Molecular and Cellular Processes Laboratory (0.34 Unit)** Laboratory techniques and experiments in fundamental aspects of cell and molecular biology. Must be taken concurrently with BIOL\_SCI 202-0.

**BIOL\_SCI 233-0 Genetics and Molecular Processes Laboratory (0.34 Unit)** Laboratory techniques and experiments in fundamental aspects of transmission genetics and molecular biology. Prerequisite: Students must have completed BIOL\_SCI 232-0. Must be taken concurrently with BIOL\_SCI 203-0.

**BIOL\_SCI 234-0 Investigative Laboratory (0.34 Unit)** A culminating life-science laboratory experience. Prerequisite: Students must have completed BIOL\_SCI 233-0.

**BIOL\_SCI 240-0 Biochemistry, Molecular and Cell Biology for ISP - 1 (1 Unit)** This course aims to provide a framework for understanding the chemistry, structure and function of life's smallest functional units known as cells. Starting out with a basic description of inherent properties of biological macromolecules, the course deals with information storage, the flow of genetic information, cytoskeleton, cell organelles, and cell division. Prerequisite: Students must be enrolled in the Integrated Science Program to register for this course.

**BIOL\_SCI 241-0 Biochemistry, Molecular and Cell Biology for ISP - 2 (1 Unit)** The course takes an in depth look at how the chemical and physical properties of organic molecules drive all aspects of life. Focus on principles of chemical evolution/diversification, biological membranes, membrane transport processes, enzyme structure and function, molecular signaling and design principles of the metabolic engine that enables the breakdown and synthesis of biological macromolecules. Prerequisites: Students must have completed CHEM 171-0, CHEM 172-0, CHEM 212-1, BIOL\_SCI 240-0, and ISP standing.

**BIOL\_SCI 301-0 Principles of Biochemistry (1 Unit)** Biochemical processes. Prerequisites: Students must have completed BIOL\_SCI 201-0 and CHEM 210-1 or CHEM 212-1 or CHEM 215-1 or CHEM 217-1 to register for this course. *Natural Sciences Distro Area*

**BIOL\_SCI 301-SG Peer-Guided Study Group: Principles of Biochemistry (0 Unit)** Peer-guided study group for students enrolled in BIOL\_SCI 301-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

#### **BIOL\_SCI 302-0 Fundamentals of Neurobiology (1 Unit)**

Cellular and biochemical approaches to the nervous system, focusing on neuron structure and function.

Prerequisites: Students must have completed BIOL\_SCI 201-0, BIOL\_SCI 202-0, BIOL\_SCI 310-0, and BIOL\_SCI 301-0 to register for this course. May not receive credit for both BIOL\_SCI 302-0 and NEUROSCI 202-0.

**BIOL\_SCI 303-0 Molecular Neurobiology (1 Unit)** Exploration of the overlap between neurobiology and molecular biology. Prerequisite: Students must have completed BIOL\_SCI 302-0 or NEUROSCI 311-0 or NEURO 206-0 to register for this course.

**BIOL\_SCI 307-0 Brain Structure, Function, and Evolution (1 Unit)** An overview of the evolution of the nervous system and cognition, from the origin of neurons to the structure and function of the human brain. No P/N. Prerequisite: Students must have completed BIOL\_SCI 302-0 or BIOL\_SCI 325-0 or NEUROSCI 202-0 in order to register for this course. *Natural Sciences Distro Area*

**BIOL\_SCI 310-0 Human Physiology (1 Unit)** An exploration of the functions of the human body at the tissue, organ, and organ system level. Emphasis on homeostatic mechanisms and interdependence within organs and organ systems and the influence of modulatory systems. Topics will include, but are not limited to: nervous, cardiovascular, respiratory, and renal systems. Prerequisites: Students must have completed BIOL\_SCI 201-0, BIOL\_SCI 202-0, and CHEM 132-0, CHEM 152-0, or CHEM 172-0. *Natural Sciences Distro Area*

#### **BIOL\_SCI 315-0 Advanced Cell Biology (1 Unit)**

Relationship of shape, structural dynamics, and function with the cellular state and gene expression; cell-to-cell communication.

Prerequisites: Students must have completed BIOL\_SCI 201-0, BIOL\_SCI 202-0, and BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 319-0 Biology of Animal Viruses (1 Unit)** Virus structure, synthesis of viral nucleic acids and proteins, the interaction of the viral and cellular genomes. Prerequisites: Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, and BIOL\_SCI 301-0 to register for this course.

#### **BIOL\_SCI 323-0 Bioinformatics: Sequence and Structure Analysis (1 Unit)**

Use of informational and modeling techniques to explore evolutionary and other problems related to the genome.

Prerequisite: Students must have taken BIOL\_SCI 241-0 or BIOL\_SCI 301-0 in order to register for this class.

**BIOL\_SCI 325-0 Animal Physiology (1 Unit)** Physiological principles and mechanisms responsible for the ability of animals to regulate variables in the steady state. Prerequisite: Students must have completed BIOL\_SCI 310-0 to register for this course.

#### **BIOL\_SCI 327-0 Biology of Aging (1 Unit)**

Biological aspects of aging, from molecular to evolutionary.

Prerequisite: Students must have completed BIOL\_SCI 201-0 and BIOL\_SCI 202-0 to register for this course.

**BIOL\_SCI 328-0 Microbiology (1 Unit)** How microbes interact with their environments, including with humans. Prerequisites: Students must have completed BIOL\_SCI 201-0, BIOL\_SCI 202-0, BIOL\_SCI 203-0, and have completed or be currently enrolled in BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 332-0 Conservation Genetics (1 Unit)** Critical issues in the management and understanding of endangered populations. Prerequisite: Students must have completed BIOL\_SCI 203-0 or ENVR\_SCI 202-0 to register for this course.

**BIOL\_SCI 333-0 Plant-Animal Interactions (1 Unit)** Plant-animal interactions, and their consequences for individuals, populations, ecological communities, and ecosystems. Examination of how these interactions are responding to ongoing global factors such as anthropogenic habitat destruction and climate change. Prerequisite: Students must have completed BIOL\_SCI 203-0, or BIOL\_SCI 339-0, or BIOL\_SCI 341-0, or BIOL\_SCI 342-0, or ENVR\_SCI 202-0 to register for this course. *Natural Sciences Distro Area*

#### **BIOL\_SCI 336-0 Spring Flora (1 Unit)**

Life cycles, vegetative and reproductive structures, and adaptations for pollination and fruit and seed dispersal of the wildflowers, trees, and shrubs of oak woodland.

Prerequisite: Students must have completed BIOL\_SCI 203-0, or BIOL\_SCI 339-0, or BIOL\_SCI 341-0, or BIOL\_SCI 342-0, or ENVR\_SCI 202-0 to register for this course.

**BIOL\_SCI 337-0 Biostatistics (1 Unit)** Approaches, methods, and techniques for analyzing datasets in ecology and conservation biology. Prerequisites: BIOL\_SCI 201-0 or ENVR\_SCI 202-0, and MATH 218-3 or MATH 220-2. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

#### **BIOL\_SCI 338-0 Modeling Biological Dynamics (1 Unit)**

Mathematical and computational techniques for analyzing and predicting biological dynamics. Techniques include statistical models, discrete- and continuous-time dynamical models, and stochastic models. Applications cover a range of scales, with an emphasis on common mathematical concepts and computational techniques, the interpretation of existing data, and making predictions for new experiments.

Prerequisite: at least one of MATH 218-1, MATH 220-1, MATH 240-0, STAT 202-0, BIOL\_SCI 337-0, OR equivalent.

*Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**BIOL\_SCI 339-0 Critical Topics in Ecology and Conservation (1 Unit)**

Seminar discussing historical and modern publications in the field.

Prerequisite: Students must have completed BIOL\_SCI 203-0, or BIOL\_SCI 341-0, or BIOL\_SCI 342-0, or ENVR\_SCI 202-0 to register for this course.

**BIOL\_SCI 341-0 Population Genetics (1 Unit)**

Processes that affect allele frequency change and thus cause evolution. Prerequisites: Students must have completed BIOL\_SCI 203-0, and BIOL\_SCI 337-0 or another course in statistics to register for this course.

**BIOL\_SCI 342-0 Evolutionary Processes (1 Unit)** Evolutionary mechanisms (natural selection, genetic drift), evolutionary history (speciation, phylogenetics), and adaptations (sex, cooperation, aging, life history). Prerequisite: Prerequisites: Students must have completed BIOL\_SCI 203-0, and BIOL\_SCI 337-0 or another course in statistics to register for this course.

**BIOL\_SCI 345-0 Topics in Biology (1 Unit)**

Topics vary but always deal with an area of advanced study in the life sciences. May include laboratory, depending on topic. May be repeated for credit with different topic.

Prerequisites: Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, and BIOL\_SCI 234-0 to register for this course.

**BIOL\_SCI 346-0 Field Ecology (1 Unit)**

An intensive experience in field ecological research.

Prerequisites: Students must have completed BIOL\_SCI 203-0 and BIOL\_SCI 337-0 or another course in statistics to register for this course.

**BIOL\_SCI 347-0 Conservation Biology (1 Unit)**

Evolution, ecology, and conservation of patterns of biological diversity.

Prerequisites: Students must have completed BIOL\_SCI 203-0 or ENVR\_SCI 202-0, and BIOL\_SCI 337-0 or another course in statistics to register for this course.

**BIOL\_SCI 349-0 Community & Population Ecology (1 Unit)** Abundance, distribution, diversity, and scaling in plant communities in space-time. Prerequisite: Students must have completed BIOL\_SCI 203-0, or BIOL\_SCI 339-0, or BIOL\_SCI 341-0, or BIOL\_SCI 342-0, or ENVR\_SCI 202-0 to register for this course.

**BIOL\_SCI 350-0 Plant Evolution and Diversity Lab (1 Unit)** Introduction to the diversity and evolutionary history of land plants. Prerequisite: Students must have completed BIOL\_SCI 203-0, or BIOL\_SCI 339-0, or BIOL\_SCI 341-0, or BIOL\_SCI 342-0, or ENVR\_SCI 202-0 to register for this course.

**BIOL\_SCI 354-0 Systems Biology (1 Unit)**

Random genetic processes, gene expression, cell adaptation, developmental processes, genomics.

Prerequisites: Students must have completed BIOL\_SCI 201-0 and BIOL\_SCI 202-0 to register for this course.

*Natural Sciences Distro Area*

**BIOL\_SCI 355-0 Immunobiology (1 Unit)**

Nature of host resistance; characteristics of antigens, antibodies; basis of immune response; hypersensitivity.

Prerequisites: BIOL\_SCI 201-0, BIOL\_SCI 202-0, and BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 360-0 Principles of Cell Signaling (1 Unit)** Emphasis on principles, components, and logic that are common to different cell signaling systems. Modern experimental strategies for studying cellular signaling as well as the implications of disrupting cell communication

pathways in disease will be described. Prerequisites: Students must have completed BIOL\_SCI 202-0 and BIOL\_SCI 203-0 to register for this course.

**BIOL\_SCI 361-0 Protein Structure and Function (1 Unit)**

Structure and function of proteins; x-ray crystallography and NMR.

Prerequisites: Students must have completed BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 363-0 Biophysics (1 Unit)** Protein interaction with small molecules; protein tertiary structure determination. Prerequisites:

Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, and BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 377-0 The Human Microbiome (1 Unit)** Course explores different communities of microorganisms in the human body – the gut, urogenital, oral, and skin microbiota, and how these communities contribute to or are altered in health and disease. Topics will include but are not limited to: the contribution of these communities to digestion and gut health, mood, obesity, the immune system, fertility and pregnancy, and neurological disorders. Prerequisites: BIOL\_SCI 201-0, BIOL\_SCI 202-0, and BIOL\_SCI 301-0 to register for this course. *Advanced Expression Natural Sciences Distro Area*

**BIOL\_SCI 378-0 Functional Genomics (1 Unit)**

Patterns of gene expression and their causes.

Prerequisites: Students must have completed BIOL\_SCI 202-0 and BIOL\_SCI 203-0 to register for this course.

**BIOL\_SCI 380-0 Biology of Cancer (1 Unit)** The disease of cancer:

causation at the cellular and molecular levels; treatment. Prerequisites: Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, and BIOL\_SCI 301-0 to register for this course. to register for this course.

**BIOL\_SCI 381-0 Stem Cells and Regeneration (1 Unit)** Developmental and molecular biology of tissue regeneration, with regard to regeneration from embryonic or adult stem cells. Discussion of conserved developmental pathways necessary for regeneration. Applications in regenerative medicine. Prerequisites: Students must have completed BIOL\_SCI 202-0 and BIOL\_SCI 203-0 to register for this course. *Natural Sciences Distro Area*

**BIOL\_SCI 390-0 Molecular Biology of Genome Editing and Engineering (1 Unit)**

Nucleic acid structure; DNA mutation, repair, recombination, replication, restriction, and modification; translation.

Prerequisites: Students must have completed BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 391-0 Developmental Biology (1 Unit)**

Molecular mechanisms underlying early embryonic development, including establishment of the body and organogenesis. Discussion of original literature.

Prerequisites: Students must have completed BIOL\_SCI 202-0 or BIOL\_SCI 240-0, and BIOL\_SCI 301-0 or BIOL\_SCI 241-0, and BIOL\_SCI 203-0 to register for this course.

**BIOL\_SCI 392-0 Morphogenesis (1 Unit)** Development of overarching principles alongside classic readings of experiments exploring key concepts in developmental biology. Prerequisites: Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, BIOL\_SCI 234-0, and BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 393-0 Human Genomics (1 Unit)** This course will examine how the analysis of the human genome and its variation provides insight into diversity, human health and our evolutionary history. Prerequisite: BIOL\_SCI 203-0. *Advanced Expression Natural Sciences Distro Area*

**BIOL\_SCI 395-0 Molecular Genetics (1 Unit)**

Exploration of recent advances that have revolutionized the fields of gene expression and cell regulation. Discussion of articles and primary research papers.

**Prerequisites:** Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, and BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 396-0 Evolution and Diversity: Mushroom Genetics and Genomics (1 Unit)** The occurrence of natural genetic variation is the raw material with which evolution has sculpted every species that has ever existed. In this laboratory-based course, students are immersed in the world of a widespread and biologically famous mushroom-forming fungus. Prerequisites: Students must have completed BIOL\_SCI 202-0, BIOL\_SCI 203-0, and BIOL\_SCI 301-0 to register for this course.

**BIOL\_SCI 397-0 Senior Thesis Colloquium (1 Unit)** Supervision while writing a Senior Thesis. Discussion of students' research. Instructor feedback on thesis drafts. Continued student research. Enrollment limited to Senior Biological Sciences majors hoping to graduate with Program Honors and/or to produce a Senior Thesis. Registration required for all Honors candidates. Prerequisites: BIOL\_SCI 398-0 or BIOL\_SCI 399-0, plus permission of instructor. *Advanced Expression*

**BIOL\_SCI 398-0 Tutorial in Biology (1 Unit)** Supervised reading and discussion or supervised laboratory work. P/N only.

**BIOL\_SCI 399-0 Independent Research (1 Unit)** Supervised independent research project. Prerequisite: BIOL\_SCI 398-0 or previous BIOL\_SCI 399-0.

## Biological Sciences Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Program Courses (10.02 units)</b>	
<i>7 core courses (5.02 units):</i>	
BIOL_SCI 201-0	Molecular Biology
BIOL_SCI 202-0	Cell Biology
BIOL_SCI 203-0	Genetics and Evolution
BIOL_SCI 232-0	Molecular and Cellular Processes Laboratory
BIOL_SCI 233-0	Genetics and Molecular Processes Laboratory
BIOL_SCI 234-0	Investigative Laboratory
BIOL_SCI 301-0	Principles of Biochemistry
<i>2 300-level BIOL SCI Electives</i> <sup>1</sup>	
<i>3 courses from one of the concentration areas:</i>	
Molecular Genetics and Genomics (p. 253)	
Cell and Developmental Biology (p. 253)	
Human Health and Disease (p. 254)	
Ecology, Evolution, and Conservation Biology (p. 254)	
Biochemistry and Biophysics (p. 254)	
Computational and Systems Biology (p. 254) <sup>2</sup>	
Molecular Neurobiology (p. 254)	
Interdisciplinary Biology (p. 254)	
<b>Related Courses</b> <sup>3</sup>	

CHEM 110-0 & CHEM 131-0 & CHEM 132-0 or CHEM 151-0 & CHEM 152-0 or CHEM 171-0 & CHEM 172-0	Quantitative Problem Solving in Chemistry and Fundamentals of Chemistry I and Fundamentals of Chemistry II General Chemistry I and General Chemistry II Advanced General Inorganic Chemistry and Advanced General Physical Chemistry
CHEM 215-1 & CHEM 215-2 or CHEM 217-1 & CHEM 217-2	Organic Chemistry I and Organic Chemistry II Accelerated Organic Chemistry I and Accelerated Organic Chemistry II
MATH 218-3 or MATH 220-2	Single-Variable Calculus with Precalculus Single-Variable Integral Calculus
1 statistics course - BIOL_SCI 337-0 or STAT 202-0 or other approved course <sup>4</sup>	
PHYSICS 130-1 & PHYSICS 130-2 or PHYSICS 135-1 & PHYSICS 135-2 or PHYSICS 140-1 & PHYSICS 140-2	College Physics and College Physics General Physics and General Physics Fundamentals of Physics and Fundamentals of Physics

<sup>1</sup> BIOL\_SCI 398-0 Tutorial in Biology and BIOL\_SCI 399-0 Independent Research do not count as 300-level BIOL SCI Electives. Students doing the Computational and Systems Biology concentration and taking a 1.0 unit course to satisfy the coding requirement may use this in place of one of the required 300-level electives.

<sup>2</sup> This concentration also has a programming competency requirement.

<sup>3</sup> Number of related course units depend on chemistry and mathematics sequences taken. Laboratory components of general and organic chemistry courses and physics courses require separate registration and bear separate credit. See chemistry (p. 260) and physics (p. 393) pages of this Catalog for more information.

<sup>4</sup> BIOL\_SCI 337-0 Biostatistics may fulfill both a concentration or elective requirement and the related course requirement in statistics.

## Concentration Courses

### Molecular Genetics and Genomics

Course	Title
Any three of the following courses:	
BIOL_SCI 332-0	Conservation Genetics
BIOL_SCI 341-0	Population Genetics
BIOL_SCI 354-0	Systems Biology
BIOL_SCI 378-0	Functional Genomics
BIOL_SCI 390-0	Molecular Biology of Genome Editing and Engineering
BIOL_SCI 391-0	Developmental Biology
BIOL_SCI 392-0	Morphogenesis
BIOL_SCI 393-0	Human Genomics
BIOL_SCI 395-0	Molecular Genetics
BIOL_SCI 396-0	Evolution and Diversity: Mushroom Genetics and Genomics

## Cell and Developmental Biology

Course	Title
Any three of the following courses:	
BIOL_SCI 310-0	Human Physiology
BIOL_SCI 315-0	Advanced Cell Biology
BIOL_SCI 319-0	Biology of Animal Viruses
BIOL_SCI 327-0	Biology of Aging

BIOL_SCI 328-0	Microbiology
BIOL_SCI 355-0	Immunobiology
BIOL_SCI 360-0	Principles of Cell Signaling
BIOL_SCI 377-0	The Human Microbiome
BIOL_SCI 380-0	Biology of Cancer
BIOL_SCI 381-0	Stem Cells and Regeneration
BIOL_SCI 390-0	Molecular Biology of Genome Editing and Engineering
BIOL_SCI 391-0	Developmental Biology
BIOL_SCI 392-0	Morphogenesis

## Human Health and Disease

Course	Title
Any three of the following courses:	
BIOL_SCI 302-0	Fundamentals of Neurobiology
BIOL_SCI 310-0	Human Physiology
BIOL_SCI 319-0	Biology of Animal Viruses
BIOL_SCI 325-0	Animal Physiology
BIOL_SCI 327-0	Biology of Aging
BIOL_SCI 328-0	Microbiology
BIOL_SCI 355-0	Immunobiology
BIOL_SCI 360-0	Principles of Cell Signaling
BIOL_SCI 377-0	The Human Microbiome
BIOL_SCI 380-0	Biology of Cancer
BIOL_SCI 381-0	Stem Cells and Regeneration
BIOL_SCI 391-0	Developmental Biology
BIOL_SCI 392-0	Morphogenesis

## Ecology, Evolution, and Conservation Biology

Course	Title
Any three of the following courses:	
BIOL_SCI 332-0	Conservation Genetics
BIOL_SCI 333-0	Plant-Animal Interactions
BIOL_SCI 336-0	Spring Flora
BIOL_SCI 337-0	Biostatistics
BIOL_SCI 339-0	Critical Topics in Ecology and Conservation
BIOL_SCI 341-0	Population Genetics
BIOL_SCI 342-0	Evolutionary Processes
BIOL_SCI 346-0	Field Ecology
BIOL_SCI 347-0	Conservation Biology
BIOL_SCI 349-0	Community & Population Ecology
BIOL_SCI 350-0	Plant Evolution and Diversity Lab

BIOL\_SCI 345-0 is also eligible to be applied to this concentration when the topic is 'Forerunners of Mammals'.

## Biochemistry and Biophysics

Course	Title
Any three of the following courses:	
BIOL_SCI 323-0	Bioinformatics: Sequence and Structure Analysis
BIOL_SCI 338-0	Modeling Biological Dynamics
BIOL_SCI 354-0	Systems Biology
BIOL_SCI 360-0	Principles of Cell Signaling
BIOL_SCI 361-0	Protein Structure and Function
BIOL_SCI 363-0	Biophysics

## Computational and Systems Biology

Course	Title
Coding requirement for this concentration may be satisfied by COMP_SCI 110-0, COMP_SCI 111-0, or NICO 101-0 plus NICO 102-0. One unit of programming coursework may substitute for one of the two required 300-level Biol Sci electives.	
Any three of the following courses:	
BIOL_SCI 323-0	Bioinformatics: Sequence and Structure Analysis
BIOL_SCI 337-0	Biostatistics
BIOL_SCI 338-0	Modeling Biological Dynamics
BIOL_SCI 354-0	Systems Biology
BIOL_SCI 378-0	Functional Genomics
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems

BIOL\_SCI 345-0, when the topic is "Principles and Methods in Systems Biology," and ES\_APPM 495-0, when the topic is "Introduction to the Analysis of RNA Sequencing Data," are also eligible to be applied to this concentration.

## Molecular Neurobiology

Course	Title
Any three of the following courses:	
BIOL_SCI 302-0	Fundamentals of Neurobiology
BIOL_SCI 303-0	Molecular Neurobiology
BIOL_SCI 307-0	Brain Structure, Function, and Evolution
BIOL_SCI 325-0	Animal Physiology
BIOL_SCI 360-0	Principles of Cell Signaling
BIOL_SCI 391-0	Developmental Biology
BIOL_SCI 392-0	Morphogenesis

## Interdisciplinary Biology

Customized concentration consisting of a thematic set of three, 300-level Biol Sci courses approved by the biology program. Interdisciplinary themes should be unique and distinct from already established concentrations.

## Honors in Biological Sciences

Seniors may be recommended to the college for graduation with honors if they have completed BIOL\_SCI 397-0 Senior Thesis Colloquium and at least one quarter of BIOL\_SCI 398-0 Tutorial in Biology or BIOL\_SCI 399-0 Independent Research, have written an approved honors thesis based on their independent study, and have sufficiently high grades.

Majors with strong academic records and an interest in pursuing honors must complete BIOL\_SCI 397-0 Senior Thesis Colloquium in Winter Quarter of Senior Year.

For more information consult the biological sciences website and see the Honors in the Major (p. 222).

## Biological Sciences Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The Integrated Science Program is a highly selective BA program in Weinberg College (see Integrated Science Program (p. 345)). Students majoring in ISP who wish to complete a second major in biological sciences should fulfill the following requirements. For concentration area options, see those listed on the stand-alone Biological Sciences Major (p. 253) page. Note that if an ISP student is pursuing both a Biological Sciences and a Chemistry second major, it is allowable to co-count CHEM 217-2 Accelerated Organic Chemistry II toward both.

Course	Title
<b>Required courses:</b>	
CHEM 217-2	Accelerated Organic Chemistry II
Three courses for the chosen concentration in biological sciences	

## Honors in Biological Sciences

Seniors may be recommended to the college for graduation with honors if they have completed BIOL\_SCI 397-0 Senior Thesis Colloquium and at least one quarter of BIOL\_SCI 398-0 Tutorial in Biology or BIOL\_SCI 399-0 Independent Research, have written an approved honors thesis based on their independent study, and have sufficiently high grades.

Majors with strong academic records and an interest in pursuing honors must complete BIOL\_SCI 397-0 Senior Thesis Colloquium in Winter Quarter of Senior Year.

For more information consult the biological sciences website and see the Honors in the Major (p. 222).

## Black Studies

[blackstudies.northwestern.edu](http://blackstudies.northwestern.edu)

The study of Black lives, cultures, and experiences has a long and distinguished history in the United States and abroad. Interdisciplinary from its beginnings, the field has developed exciting insights and firm intellectual and empirical foundations to systematically study the social, political, cultural, and economic dimensions of race both domestically and internationally. With these strengths and traditions, the Department of Black Studies provides opportunities to explore the richness and diversity of Black life in a meaningful and coherent way.

The department offers courses that focus on people of African descent in the United States and other regions of the Americas and the African diaspora—the communities created by the dispersion of peoples from the African continent. Students in Black Studies will acquire breadth of knowledge through introductory courses and depth of knowledge through the flexible capacity to specialize in different disciplinary areas. Students completing a Black Studies major will have a strong understanding of: Black movements, identities, politics, arts and popular cultures; interrelationships of race, class, gender, sexuality, ethnicity, nation and religion in Black social life; histories and geographies of the Black world; and colonial-racial formations in the making of the modern world. Students in Black Studies will acquire skills in critical thinking, research and written and oral communication. These skills will be widely applicable in other fields of study. Upon completion of the Black Studies major or minor, students will be able to: critically evaluate information, positions and arguments; access credible information using paper-based

(primary, secondary and tertiary), electronic, oral and material resources; plan, design and execute an original piece of research using a variety of textual sources and/or research methodologies; formulate strong arguments supported by evidence; and clearly communicate evaluation of information and research results in both oral and written forms.

Black Studies provides excellent preparation for graduate work in the social sciences, the humanities, and the professions, as well as for jobs and careers in a variety of fields. Education, law, journalism, urban planning, healthcare delivery and administration, business, social work, and politics are only a few of the fields for which Black Studies provides an excellent background. In addition, as scholars and political leaders pay increased attention to global economic, political, and social phenomena, Black Studies touches on issues of far-reaching national and international significance.

## Program of Studies

- Black Studies Major (p. 258)
- Black Studies Minor (p. 258)

**BLK\_ST 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thrive at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**BLK\_ST 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**BLK\_ST 210-0 Introduction to African American Literature (1 Unit)** Literature of Black people in the United States from slavery to freedom. Works of major writers and significant but unsung bards of the past. ENGLISH 266-0 and BLK\_ST 210-0 are taught together. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 211-0 Literatures of the Black World (1 Unit)** Introductory survey of fiction, poetry, drama, folktales, and other literary forms of Africa and the African diaspora. Texts may span the precolonial, colonial, and postcolonial periods and cover central themes, such as memory, trauma, spirituality, struggle, identity, freedom, and humor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**BLK\_ST 212-1 Introduction to African-American History: Key concepts from 1700-1861 (1 Unit)** African origins, the slave trade, origins of slavery and racism in the United States, life under slavery in the North and the South. BLK\_ST and HISTORY 212-1 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 212-2 Introduction to African American History: Emancipation to Civil Rights Movement (1 Unit)** Emancipation to the civil rights era. Reconstruction, rise of legal segregation, strategies of resistance, migration, and urbanization. BLK\_ST 212-2 and HISTORY 212-2 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 213-0 History of the Black World (1 Unit)** Introductory survey of the history of Africans and their descendants across the globe. African civilizations prior to European colonialism, encounters between Africa and Europe, movements of "Africans" to the Americas

and elsewhere, and development of Black Introductory survey of the history of Africans and their descendants across the globe. African civilizations prior to European colonialism, encounters between Africa and Europe, movements of "Africans" to the Americas and elsewhere, and development of Black communities in and outside Africa. *Global Perspectives on Power, Justice, and Equity* Historical Studies Distro Area  
*Historical Studies Foundational Discipline*

**BLK\_ST 214-0 Comparative Race and Ethnic Studies (1 Unit)** Problems and experiences of racialized minorities: Blacks, Native Americans, Asian Americans, and Latina/o peoples. Comparison of their relationships with each other and with the majority society. Historical Studies Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science. *Historical Studies Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 215-0 Introduction to Black Social & Political Life (1 Unit)** Analysis of class, gender, sexuality, immigrant status, and ethnic origin in Black society and politics. Focus on demographic trends, lived experiences, and ideological debates. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 218-0 Asian/Black Historical Relations in the U.S. (1 Unit)** Comparative historical analysis of relations of these groups in the United States, including racialized and sexualized discourses structuring interracial relations and social, political, and economic location. Slavery, immigration, model minority myth, cross-racial politics. BLK\_ST 218-0 and ASIAN\_AM 218-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**BLK\_ST 220-0 Civil Rights and Black Liberation (1 Unit)** The Northern and Southern Civil Rights Movements and the rise of Black nationalism and feminism, 1945-72. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 225-0 African-American Culture (1 Unit)** Survey of African American culture from slavery to the present. Relation of African American culture to African and Euro-American cultures, the Black Atlantic as a unit of analysis, representations of Blackness in the public imagination. *Literature Fine Arts Distro Area*

**BLK\_ST 236-0 Introduction to Black Studies (1 Unit)** Introduction to the discipline of Black Studies using key historical and theoretical texts. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 245-0 The Black Diaspora and Transnationality (1 Unit)** Examination of events, movements, theories, and texts that have shaped development of the African diaspora. Topics include slavery, abolitionism, pan-Africanism, the culture-politics nexus, hip-hop, AIDS, and linkages among gender, sexuality, and diasporic sensibilities. *Historical Studies Distro Area*

**BLK\_ST 247-0 Black Life. Trans Life. (1 Unit)** This course will introduce students to the parameters and textures of Black life, Trans life, and Black Trans life. Popular discourse has either depicted Black Trans people as glamorous superstars or always and already predisposed to death. This course, then, seeks to usefully complicate these narratives and focus on Black and Trans \*life\*. *U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 250-0 Race, Class and Gender (1 Unit)** Introduction to scholarship and key theories that treat race, class, and gender as intersecting social constructs. Race, class, and gender in work, family and reproduction, education, poverty, sexuality, and consumer culture. How race, class, and gender inform identity, ideology, and politics to incite social change. *Social Behavioral Sciences Distro Area*

**BLK\_ST 251-0 Introduction to Critical Mixed Race Studies (1 Unit)** Exploration of demographic trends in interracial and interethnic marriages to highlight the complexity of the American experience. Special attention to mixed-race experiences portrayed in film and novels. BLK\_ST 251-0 and ASIAN\_AM 251-0 are taught together; students may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 259-0 Introduction to African-American Drama (1 Unit)** Thematic and historical survey of African American drama. Sociopolitical context, the aesthetic reflected in the work, impact on African American and general theater audiences. *Literature Fine Arts Distro Area*

**BLK\_ST 261-0 Queer Literatures in the African Diaspora (1 Unit)** Advanced introduction to critical theories of race, gender, and sexuality in the African diaspora from the 19th century to today. *Literature Fine Arts Distro Area*

**BLK\_ST 262-0 Introduction to Black Religions: The North American Experience (1 Unit)** Introduces students to the variety of Black religions that developed during and after the Atlantic slave trade up to the present. Explores these traditions as continuities/changes of West African religious cosmologies. Examines the interplay between religion, politics, and the constructions of racial identities within various forms of Christianity, Islam, and other expressive cultures. RELIGION 262-0 and BLK\_ST 262-0 are taught together; may not receive credit for both. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 275-0 Africans and African Americans: Cultural Entanglements (1 Unit)** Students will explore how the afterlives of colonialism and slavery have shaped the contemporary relationships between Africans and African Americans. Students will explore how writers, musicians, performers, and scholars excavate the ongoing intimacies between the continent and the African diaspora, in a post-Civil Rights U.S. and in contemporary Africa. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**BLK\_ST 310-0 Contemporary Asian Black Relations (1 Unit)** Divides between these groups, as well as areas of positive cross-cultural collaboration. Historical analysis of reparations, the 1992 Los Angeles riots, and affirmative action. Cross-racial exchange in youth expressions, popular culture, hip-hop. BLK\_ST 310-0 and ASIAN\_AM 310-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area*

**BLK\_ST 315-0 Religion in the Black Atlantic (1 Unit)** Afro-Atlantic religions since the 1400s; traditions of Orisa devotion and monotheisms; religion and revolution in African slave religion; racialization and empire; theories of religion, materialities, and diaspora. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**BLK\_ST 317-0 Black Political Thought (1 Unit)** Black protest, Black radical politics and Black-led demonstrations are nothing new. How should we understand the motivations and ideas involved in Black radical politics? This course seeks to introduce students to the historical and political underpinnings of issues and questions raised by what Cedric Robinson famously referred to as the "Black Radical Tradition." *Social*

*Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 320-0 Social Meaning of Race (1 Unit)** Race as a social concept and recurrent cause of differentiation in multiracial societies. Impact of race on social, cultural, economic, and political institutions. Discussion of prejudice, racism, and discrimination. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 325-0 Education for Black Liberation (1 Unit)** This class considers what it means to conceptualize, articulate, and actualize a liberatory Black educational project within U.S. public schools structured by anti-Blackness. The course treats historical and contemporary manifestations of anti-Blackness in schools, as well as the ways Black students, educators, administrators, community and family members, and scholars have worked towards liberation. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 327-0 Politics of Black Popular Culture (1 Unit)** Examination of the debates within Black communities about the proper role and function of Black art and artists in relation to Black politics. *Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**BLK\_ST 330-0 Black Women in the 20th Century (1 Unit)** Experiences and leadership of African American women in major events in recent history, including anti-lynching, women's suffrage, civil rights movements, and World War II. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**BLK\_ST 331-0 The African American Novel (1 Unit)** Readings in classic Black American fiction. The author as creator and participant. Works of Wright, Ellison, Baldwin, and others. Prerequisite: sophomore standing. *Literature Fine Arts Distro Area*

**BLK\_ST 334-0 Gender and Black Masculinity (1 Unit)** Perceptions and constructions of Black masculinity within African American and "American" cultures in the United States; readings in gender and sexuality studies, feminist theory, African American studies, and cultural studies. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 335-0 Race and Literature in 19th Century America (1 Unit)** Examination of the evolution and persistence of the notion of "race" in 19th century America, with attention to the origins of the idea of race in the West. Focus on the multiracial character of 19th century America.

**BLK\_ST 339-0 Unsettling Whiteness (1 Unit)** Making the historical, political, and cultural formation of whiteness in Western modernity visible and narratable for commentary and analysis. Particular reference to contemporary culture. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**BLK\_ST 342-0 Comparative Slavery (1 Unit)** Traces slavery across historical epochs and geographic contexts, with an emphasis on Latin America, the Caribbean, and the United States. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**BLK\_ST 345-0 Afro-Latin America (1 Unit)** Exploration of Afro-Latin communities, cultures, and identities throughout Latin America and the Hispanic diaspora after 1800. Emergence of race and nation in modern Latin America, migration, gender, Afro-Latin spiritual systems and religion, family, and politics. *Historical Studies Distro Area*

**BLK\_ST 350-0 Theorizing Blackness (1 Unit)** Advanced introduction to critical theories of race and racialization. Investigation of Blackness as

a category of critical analysis for analyzing Afro-diasporic formations. Consideration of how Blackness is shaped by gender, class, sexuality, and nationality. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 355-0 Diaspora Studies (1 Unit)** Interdisciplinary examination of the significance of diasporas, their histories, and common dynamics, illustrated with examples drawn from a wide range of cases. *Social Behavioral Sciences Distro Area*

**BLK\_ST 360-0 Major Authors (1 Unit)** In-depth examination of a selected author's body of work. Choice of author varies. May be repeated for credit with change of author. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 363-0 Racism in Western Modernity (1 Unit)** Impact of racism in the formation of Western modernity. Critical conceptual and historical analyses of the social formation of "race" and the historical implications of racism in the contemporary West.

**BLK\_ST 365-0 Black Chicago (1 Unit)** Surveys the social, cultural, and political history of African Americans in Chicago, including the Great Migration, the Black political machine, Black Chicago music, racial segregation, internal class stratification, and the role of Black churches. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**BLK\_ST 375-0 Post Colonial African American Studies (1 Unit)** Development of critical approaches to African American studies from the perspectives of postcolonial analysis. In particular, examination of the meaning of the colonial in the formation of African American experiences and the significance of modernity, race, and Black politics in the historical contexts of the United States, Latin America, and the Caribbean.

**BLK\_ST 378-0 Harlem Renaissance (1 Unit)** African American political and social movements and cultural production in theater, music, visual arts, and literature from 1915 to 1930. Prerequisite: BLK\_ST 210-0 or another African American literature course. *Literature Fine Arts Distro Area*

**BLK\_ST 379-0 Black Women Writers (1 Unit)** Intensive, multi-genre examination of the contribution of Black women to African American, women's, and American literature, with consideration of the factors and figures that have influenced the reception of Black women's writings across time. *Literature Fine Arts Distro Area*

**BLK\_ST 380-0 Topics in African-American Studies (1 Unit)** Advanced work on social, cultural, or historical topics. May be repeated for credit with different topic. Prerequisite: advanced student or senior standing.

**BLK\_ST 381-0 Topics in Transnational Black Studies (1 Unit)** Examination of texts such as novels, poetry, film, drama, slave narratives, political manifestos, and historical texts in order to compare how people from across the African diaspora have approached issues of identity, culture, and community. Prerequisite: advanced student or senior standing.

**BLK\_ST 390-0 Research Seminar (1 Unit)** Methods of researching the Black experience. Identification of research problems; location, selection, and critique of relevant literature; data gathering and analysis; report writing. Topics vary. Prerequisite: advanced student or senior standing. .

**BLK\_ST 396-0 Internship in Black Studies (1 Unit)** Analysis of social and cultural institutions through field study and participant observation. Entails a final submission overseen by a Northwestern faculty member. Prerequisite: advanced student or senior standing.

**BLK\_ST 399-0 Independent Study (1 Unit)** Open to advanced students with consent of instructor. Prerequisite: advanced student or senior standing.

## Black Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Department Courses (12 units)</b>	
1 core course:	
BLK_ST 236-0	Introduction to Black Studies
10 elective courses in the department, including at least 6 at the 300 level	
1 senior course chosen from:	
BLK_ST 390-0	Research Seminar
BLK_ST 396-0	Internship in Black Studies
BLK_ST 399-0	Independent Study

## Honors in Black Studies

Majors with strong academic records and an interest in pursuing honors must notify the director of undergraduate studies during fall of senior year. To qualify for honors, a student must complete a substantial senior-year research project. With the director, the student selects a thesis adviser. The thesis adviser can be a member or an affiliate of the Department. Completion of the thesis ordinarily requires at least two quarters of research and writing. During one or both of those quarters students may register for BLK\_ST 399-0 Independent Study with the thesis adviser. This course counts as either 1 of the elective courses in the major or as the senior-course requirement.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information contact the director of undergraduate studies and see Honors in the Major. (p. 222)

## Black Studies Minor

The minor in Black Studies provides thorough exposure to contemporary scholarship concerning the Black experience.

## Minor Requirements

Course	Title
<b>Minor Courses (8 units)</b>	
1 core course:	
BLK_ST 236-0	Introduction to Black Studies
7 elective courses in the department, at least 4 at the 300 level	

## Business Institutions Minor

The minor in business institutions requires the successful completion with a grade of C- or above of 11 courses:

- 4 prerequisite courses in mathematics, statistics, and economics
- 4 business tools courses
- 1 writing and speaking course
- 2 social sciences and humanities electives

*Before declaring the minor students must complete the 4 prerequisite courses with a grade of C- or higher, or have equivalent AP course credit posted to their academic record.*

See more details about the minor (p. 259). Interested students should consult a program adviser or visit the program office for additional information.

## Requirements for the minor in Business Institutions

Course	Title
<b>Prerequisites (4 units)</b>	
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics
STAT 210-0	Introduction to Probability and Statistics (or equivalent) <sup>1</sup>
MATH 218-1 or MATH 220-1	Single-Variable Calculus with Precalculus Single-Variable Differential Calculus
<b>Minor Requirements (7 units)<sup>2</sup></b>	
4 business tools courses: <sup>3</sup>	
BUS_INST 301-0	Accounting
BUS_INST 302-0	Marketing Management
BUS_INST 303-0	Leadership in Organizations
BUS_INST 304-0	Corporate Finance (or equivalent) <sup>4</sup>
1 writing and speaking in business course: <sup>5</sup>	
ENGLISH 282-0	Writing and Speaking in Business
2 social sciences and humanities electives that have business institutions and practices as a central focus of inquiry, chosen from the list below. See the program website for newly approved courses and other updates.	

<sup>1</sup> Equivalents include BMD\_ENG 220-0 Introduction to Biomedical Statistics, CHEM\_ENG 312-0 Probability and Statistics for Chemical Engineering, ELEC\_ENG 302-0 Probabilistic Systems, IEMS 201-0 Introduction to Statistics, IEMS 302-0 Probability, MATH 310-1 Probability and Stochastic Processes, MATH 311-1 MENU: Probability and Stochastic Processes, MATH 314-0 Probability and Statistics for Econometrics, MATH 385-0 Probability and Statistics for MMSS, PSYCH 201-0 Statistical Methods in Psychology, POLI\_SCI 312-0 Statistical Research Methods, SESP 210-0 Introduction to Statistics and Research Methodology, STAT 202-0 Introduction to Statistics and Data Science, and STAT 383-0 Probability and Statistics for ISP.

<sup>2</sup> None of the 7 courses may be double-counted toward any major, minor, or certificate except as a related course for a major. Double-counting permitted with a home-school distribution requirement, foundational discipline, US or global perspectives, or advanced expression requirement.

<sup>3</sup> With advance approval of the program director a total of only one non-Northwestern course, course credit from study abroad, or a course offered by Northwestern's School of Professional Studies (SPS) may count as a business tools course for the minor. Special accommodations may be made for transfer students.

<sup>4</sup> Equivalents include ECON 360-1 Foundations of Corporate Finance Theory and KELLG\_FE 310-0 Principles of Finance.

<sup>5</sup> Students completing majors in English, History, or Philosophy, may petition the program director to waive this requirement. However, these students are strongly encouraged to consider taking ENGLISH 282-0 Writing and Speaking in Business because it covers communications skills related to the business environment that may not be covered in writing-intensive courses in other disciplines.

## Approved Social Science & Humanities courses for the minor

Course	Title
ANTHRO 240-0	Anthropology of Money
BUS_INST 321-0	Business and Economic Institutions in Historical Perspective
BUS_INST 331-0	Real Estate Finance & Investment
CHINESE 212-0	Chinese in Business Practice 1
CHINESE 312-1	Chinese in Business Practice 2
CHINESE 312-2	Multinational Corporations in China
COMM_ST 274-0	Power in Entertainment
FRENCH 309-0	French For Professions
GERMAN 209-0	German in the Business World
GERMAN 309-1	The German Market and the Globalized Economy
GERMAN 309-2	Germany, Inc.: Marketing and Corporate Social Responsibility
HISTORY 325-0	History of American Technology
ITALIAN 206-0	Business Italian
LEGAL_ST 206-0	Law and Society
LEGAL_ST 315-0	Corporation in US Law and Culture
PHIL 275-0	Climate Change and Sustainability: Ethical Dimensions
PHIL 364-0	Business and Professional Ethics
POLI_SCI 341-0	International Political Economy
POLI_SCI 348-0	Globalization
POLI_SCI 374-0	Politics of Capitalism
PSYCH 387-0	Consumer Psychology and Marketing Research
RTVF 310-0	Television History
RTVF 314-0	History of the Recording Industry
SOCIAL 206-0	Law and Society
SOCIAL 215-0	Economy and Society
SOCIAL 288-0	Institutions and Society
SOCIAL 302-0	Sociology of Organizations
SOCIAL 316-0	Economic Sociology
SOCIAL 324-0	Global Capitalism
SOCIAL 330-0	Law, Markets, and Globalization
SOCIAL 331-0	Markets, Hierarchies & Democracies
SOCIAL 335-0	Sociology of Rational Decision Making
SOC_POL 312-0	Social Policymaking and Implementation
SOC_POL 331-0	Economics of Inequality and Discrimination
SPANISH 206-0	Spanish for Professions: Business
STAT 301-1	Data Science 1 with R
STAT 301-2	Data Science 2 with R
STAT 301-3	Data Science 3 with R

Some variable-topic classes offered under ENGLISH, HISTORY, or HUM may also be applied; visit website or see adviser for details.

One credit only may be from BUS\_INST 394-LK, or internship-related credit, or ENTREP 3XX credit, or IMC 300-0.

Excluding ECON 201-0 and ECON 202-0, economics courses may be applied to the Social Science & Humanities Electives by students who are NOT doing the major or the minor in economics.<sup>1</sup>

<sup>1</sup> Students earning a **minor** in economics may use ECON 300-level courses towards their Social Science & Humanities Elective requirement. Students earning a **major** in economics may **not** use any economics courses to fulfill their Social Science & Humanities Elective requirement.

## Business Institutions

[businessinstitutions.northwestern.edu](http://businessinstitutions.northwestern.edu)

The minor in business institutions offered by the Harvey Karpnick Center for Business Institutions is designed to provide undergraduates with a rigorous introduction to business and management fundamentals. It allows students to prepare for employment in the business world by building on skills and knowledge they acquire through other Northwestern coursework. The program also connects students' study of business and management fundamentals to broader areas of academic inquiry, both by linking the study of business management principles to the social sciences scholarship on which it is based, and by introducing social sciences and humanities scholarship on the cultural, political, philosophical, literary, and social aspects of business institutions. Thus, the program is not meant to serve as narrowly conceived preprofessional training; instead it offers a broad multidisciplinary perspective on a significant area of inquiry in 21st-century society.

Students without extensive quantitative training are particularly encouraged to apply. The program is designed so students can acquire the necessary quantitative background by completing four basic prerequisite courses in mathematics, statistics, and economics.

## Program of Study

- Business Institutions Minor (p. 258)

**BUS\_INST 301-0 Accounting (1 Unit)** Introduction to both financial and managerial accounting. Use of organizations' financial statements for making decisions. Prerequisites: ECON 201-0 and ECON 202-0.

**BUS\_INST 302-0 Marketing Management (1 Unit)** Basic principles and applications of marketing management. Marketing segmentation, target marketing, brand positioning, consumer behavior, channels strategy, pricing, advertising and promotion. Prerequisites: ECON 201-0 and ECON 202-0.

**BUS\_INST 303-0 Leadership in Organizations (1 Unit)** Social science tools for solving organizational problems and influencing individuals, groups, and organizations. Competitive decision making, reward system design, team building, strategic negotiation, political dynamics, corporate culture, and strategic organizational design. Prerequisites: ECON 201-0 and ECON 202-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**BUS\_INST 304-0 Corporate Finance (1 Unit)** Effects of time and uncertainty on valuation and decision making. Discounting techniques, stock and bond valuation, capital budgeting, firm valuation, capital asset pricing model, financial options. May not receive credit for both this course and ECON 360-1. Not for students who have previously taken KELLG\_FE 310-0. Prerequisites: ECON 201-0 and ECON 202-0; STAT 210-0 or equivalent; MATH 218-1 or MATH 220-1; and BUS\_INST 301-0.

**BUS\_INST 321-0 Business and Economic Institutions in Historical Perspective (1 Unit)** Factors affecting economic growth and challenges to achieving economic success. Organization of firms and financial markets; corporate governance; innovation; financial crises; income inequality; race and gender. Prerequisites: ECON 201-0 and ECON 202-0; STAT 210-0 or equivalent; and MATH 218-1 or MATH 220-1. *Historical Studies Distro Area*

**BUS\_INST 331-0 Real Estate Finance & Investment (1 Unit)** An introduction to the fundamental concepts, principles, analytical methods and tools used for making investing and financing decisions regarding income producing properties. Topics covered include leases, cash flow-

based real estate evaluation, property financing (debt), real estate private equity, and property taxation. Prerequisites: ECON 201-0, ECON 202-0, STAT 210-0 or equivalent, BUS\_INST 304-0 or equivalent.

**BUS\_INST 394-LK Professional Linkage Seminar (1 Unit)** Content varies. Possible topics include entrepreneurship, investment banking, business ethics, global marketing, sports marketing, and nonprofit management. Prerequisites vary.

#### **BUS\_INST 399-0 Independent Study (1 Unit)**

## **Catholic Studies**

A Minor in Catholic Studies (p. 416) is offered by the department of Religious Studies (p. 412).

## **Chemistry**

[chemistry.northwestern.edu](http://chemistry.northwestern.edu)

Chemistry is the study of molecular structure, chemical reactions, and the molecular basis of solids, liquids, and gases. Training in chemistry blends descriptive, conceptual, and mathematical elements in both lectures and laboratory work. While developing chemical knowledge is essential, the progressive honing of analytical abilities and application of this knowledge to research are just as important. Courses are carefully designed to give a rigorous introduction to chemistry for both science and non-science students.

The broad applicability of phenomena and rigorous methodology of chemistry provide a wide range of career options for students who pursue a major, minor, or advanced coursework in chemistry.

The department meets the needs of students with diverse career objectives—including professional chemistry, medicine, and teaching—by offering:

- a foundation in mathematics, physics, and related sciences
- a core curriculum introducing the fundamental areas of organic, inorganic, physical, and analytical chemistry
- concentrations in six different areas of chemistry
- opportunities to participate in research

Options are also provided for Northwestern's engineering, biological sciences, and pre-health professional programs.

The chemistry faculty is actively engaged in a wide spectrum of original research in which undergraduates are encouraged to participate along with graduate students and visiting scholars from around the world. Undergraduates have opportunities to use modern instrumentation and to participate in seminars, colloquia, and informal contacts with scholars.

## **The Teaching of Chemistry**

Weinberg College students pursuing a major in chemistry who also wish to be certified for secondary teaching must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## **Chemistry for Pre-Health Students**

Students who have completed any of the general chemistry course sequences, that is

CHEM 110-0, CHEM 131-0/CHEM 141-0, CHEM 132-0/CHEM 142-0, or CHEM 151-0/CHEM 161-0, CHEM 152-0/CHEM 162-0, or CHEM 171-0/CHEM 181-0, CHEM 172-0/CHEM 182-0, are considered to have completed a full year of general chemistry.

Students who complete CHEM 215-1/CHEM 235-1 and CHEM 215-2/CHEM 235-2 will have covered all the fundamental organic chemistry topics required for preparation for the health professions. Students who take the chemistry major organic chemistry sequence must complete CHEM 217-1/CHEM 237-1, CHEM 217-2/CHEM 237-2 and CHEM 217-3/CHEM 235-3 to cover all these topics.

## **General Chemistry, Advanced Placement, and Course Credit**

Entering students may receive credit in chemistry by means of the College Board's AP Chemistry examination or the International Baccalaureate HL Chemistry examination, but this does not dictate course placement. Course placement in Chemistry is determined by the department's placement assessment(s) taken on entry to Northwestern. Depending on their result on the department's placement assessment(s), students will be advised to register for one of the following:

- CHEM 110-0 Quantitative Problem Solving in Chemistry
- CHEM 151-0 General Chemistry I
- CHEM 171-0 Advanced General Inorganic Chemistry
- Organic Chemistry, either CHEM 215-1 or CHEM 217-1

Students may not start any general chemistry sequence with CHEM 131-0, CHEM 152-0, or CHEM 172-0 regardless of their AP or IB credit. Questions should be directed to the Director of Undergraduate Studies in Chemistry.

Students may not retain AP/IB credit if they replace the credit by taking a course at an equal or lower level than the course credit earned from the AP/IB test score. For example:

- Students who receive 1 test credit listed as Chem 1X0 may take CHEM 151-0 for credit, but they may not retain credit for both.
- Students who receive 1 test credit listed as Chem 1X1 may take CHEM 171-0 for credit, but they may not retain credit for both.
- Students who receive 1 test credit listed as Chem 1X2 may take CHEM 172-0 for credit, but they may not retain credit for both.
- Students who receive 1 test credit listed as Chem 11X may take CHEM 181-0 for credit, but they may not retain credit for both.
- Students who receive 1 test credit listed as Chem 12X may take CHEM 182-0 for credit, but they may not retain credit for both.

Due to overlap in content, the following restrictions apply:

- Students may receive credit for only 1 of CHEM 131-0, CHEM 151-0, or CHEM 171-0
- Students may receive credit for only 1 of CHEM 132-0, CHEM 152-0, or CHEM 172-0
- Students may receive credit for only 1 of CHEM 141-0, CHEM 161-0, or CHEM 181-0
- Students may receive credit for only 1 of CHEM 142-0, CHEM 162-0, or CHEM 182-0.

Students whose chemistry placement exam scores place them into organic chemistry but who choose instead to begin with CHEM 171-0/CHEM 181-0 must also complete CHEM 172-0/CHEM 182-0

before taking organic chemistry. Students who place into organic chemistry may not take CHEM 110-0 or CHEM 151-0/CHEM 161-0.

**The laboratory components of general and organic chemistry courses require separate registration, but co-registration, and bear separate credit. When such a course is listed as a prerequisite for another course, the associated lab is also a prerequisite.**

## Programs of Study

- Chemistry Major (p. 264)
- Chemistry Minor (p. 266)
- Chemistry Second Major for ISP Students (p. 266)
- Chemistry BA/MS (p. 267)

**The laboratory components of general and organic chemistry courses require separate registration, but co-registration, and bear separate credit. When such a course is listed as a prerequisite for another course, the associated lab is also a prerequisite.**

**CHEM 100-0 Introduction to Calculus and Chemistry (1 Unit)** For participants in Bio&ChemEXCEL summer program. Introduction to calculus and general chemistry. Taken with BIOL\_SCI 100-0.

**CHEM 100-BR Introduction to Problem Solving in Chemistry (0.5 Unit)** For participants in Bridge I summer program. Developing facility with quantitative tools to solve problems in chemistry. Prerequisites: MATH 100-BR and HUM 100-1-BR.

**CHEM 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**CHEM 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**CHEM 110-0 Quantitative Problem Solving in Chemistry (1.34 Units)** Solution strategies for traditional word problems and their application to basic chemistry quantitative problems: dimensional analysis, chemical equations, stoichiometry, limiting reagents. Prerequisite: permission of department.

**CHEM 110-MG Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in CHEM 110-0. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**CHEM 110-SG Peer-Guided Study Group: Quantitative Problem Solving in Chemistry (0 Unit)** Peer-guided study group for students enrolled in CHEM 110-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 131-0 Fundamentals of Chemistry I (1 Unit)** Quantum mechanics, electronic structure, periodic properties of elements, chemical bonding, thermodynamics, intermolecular forces, properties of solids and liquids, solutions and colligative properties. Prerequisite: CHEM 110-0 (C- or better). *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 131-MG Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in

CHEM 131-0. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**CHEM 131-SG Peer-Guided Study Group: Fundamentals of Chemistry I (0 Unit)** Peer-guided study group for students enrolled in CHEM 131-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 132-0 Fundamentals of Chemistry II (1 Unit)** Chemical equilibrium, aqueous solution equilibria, chemical kinetics, metals in chemistry and biology, oxidation-reduction reactions and electrochemistry. Prerequisites: CHEM 131-0, CHEM 141-0 (C- or better). *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 132-MG Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in CHEM 132-0. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**CHEM 132-SG Peer-Guided Study Group: Fundamentals of Chemistry II (0 Unit)** Peer-guided study group for students enrolled in CHEM 132-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 141-0 Fundamentals of Chemistry Laboratory I (0.34 Unit)** Chemical analysis of real samples using basic laboratory techniques including titration, colorimetric analysis, density measurements, and atomic spectroscopy. Planning, data collection, interpretation, and reporting on experiments. Must be taken concurrently with CHEM 131-0. Prerequisite: CHEM 110-0 (C- or better).

**CHEM 142-0 Fundamentals of Chemistry Laboratory II (0.34 Unit)** SUMMER OFFERING - Lab fee. Must be taken concurrently with Chem 132-0.

**CHEM 151-0 General Chemistry I (1 Unit)** Quantum mechanics, electronic structure, periodic properties of elements, chemical bonding, thermodynamics, gas laws, intermolecular forces, properties of solids and liquids, solutions and colligative properties. Prerequisite: permission of department by placement exam. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 151-SG Peer-Guided Study Group: General Chemistry I (0 Unit)** Peer-guided study group for students enrolled in CHEM 151-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 152-0 General Chemistry II (1 Unit)** Chemical equilibrium, aqueous solution equilibria, chemical kinetics, metals in chemistry and biology, oxidation-reduction reactions and electrochemistry. Prerequisites: CHEM 151-0, CHEM 161-0 (C- or better). *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 152-SG Peer-Guided Study Group: General Chemistry II (0 Unit)** Peer-guided study group for students enrolled in CHEM 152-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 161-0 General Chemistry Laboratory I (0.34 Unit)** Chemical analysis of real samples using basic laboratory techniques including titration, colorimetric analysis, density measurements, and atomic

spectroscopy. Planning, data collection, interpretation, and reporting on experiments. Must be taken concurrently with CHEM 151-0.

**CHEM 162-0 General Chemistry Laboratory II (0.34 Unit)** Chemistry laboratory techniques applied to materials science and nanotechnology, acid-base chemistry, and chemical kinetics. Planning, data collection, interpretation, and reporting on experiments. Must be taken concurrently with CHEM 152-0. Prerequisites: CHEM 151-0, CHEM 161-0 (C- or better).

**CHEM 171-0 Advanced General Inorganic Chemistry (1 Unit)** Review of mole problems and stoichiometry; descriptive chemistry, elements, compounds, and inorganic reactions; gas laws; phase equilibria and colligative properties; chemical equilibrium; aqueous equilibria; topics in chemical bonding and molecular structure. Must be taken concurrently with CHEM 181-0. Prerequisite: department placement exam. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 172-0 Advanced General Physical Chemistry (1 Unit)**

Thermodynamics and equilibrium; chemical kinetics and mechanism; electrochemistry; electronic structure of the atom and quantum theory; advanced topics in chemical bonding; coordination compounds; solid-state chemistry; nuclear chemistry. Must be taken concurrently with CHEM 182-0. Prerequisites: CHEM 171-0, CHEM 181-0 (C- or better); MATH 220-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 181-0 Advanced General Inorganic Chemistry Laboratory (0.34 Unit)**

Laboratory techniques for studying chemical analysis and chemical reactions relevant to environmental or materials research. Planning, data collection, interpretation, and reporting on experiments. Must be taken concurrently with CHEM 171-0. Prerequisite: department placement exam.

**CHEM 182-0 Advanced General Physical Chemistry Laboratory (0.34 Unit)**

Study of physical chemistry (acid base chemistry, thermodynamics, etc.) in the laboratory. Planning, data collection, interpretation, and reporting on these experiments. Must be taken concurrently with CHEM 172-0. Prerequisite: CHEM 171-0, CHEM 181-0 (C- or better).

**CHEM 201-0 Chemistry of Nature and Culture (1 Unit)** Chemistry for the nonscientist. Chemicals commonly encountered in everyday life. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 215-1 Organic Chemistry I (1 Unit)** Foundational concepts in organic chemistry will be introduced. Topics include structure and properties of common functional groups, acidity/basicity, conformational analysis, stereochemistry, and reactivity of organic compounds. Prerequisites: CHEM 132-0 and CHEM 142-0, or CHEM 152-0 and CHEM 162-0, or CHEM 172-0 and CHEM 182-0 (C- or better); or qualifying score on the Chemistry Placement Exam. Must be taken concurrently with CHEM 235-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 215-2 Organic Chemistry II (1 Unit)** Fundamental concepts in organic chemistry will be covered. The topics will include important functional groups and will include: nomenclature, structure, properties, and multistep synthesis. Reaction mechanisms for organic transformations will be presented, and synthesis strategies will be covered. Prerequisite: Grade of C- or better in CHEM 215-1 and CHEM 235-1. Must be taken concurrently with CHEM 235-2. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 215-3 Organic Chemistry III (1 Unit)** Advanced concepts in modern organic chemistry will be introduced. The material will focus on recent developments in synthetic organic chemistry, including: concerted/pericyclic reactions, catalysis, green/environmental

chemistry, automated synthesis, and combinatorial/screening methods.

Prerequisite: Grade of C- or better in CHEM 215-2 and in CHEM 235-2. Must be taken concurrently with CHEM 235-3. *Natural Sciences Distro Area*

**CHEM 215-MG-1 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in CHEM 215-1. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**CHEM 215-MG-2 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in CHEM 215-2. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**CHEM 215-SG-1 Peer-Guided Study Group: Organic Chemistry I (0 Unit)** Peer-guided study group for students enrolled in CHEM 215-1. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 215-SG-2 Peer-Guided Study Group: Organic Chemistry II (0 Unit)** Peer-guided study group for students enrolled in CHEM 215-2. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 215-SG-3 Peer-Guided Study Group: Organic Chemistry III (0 Unit)** Peer-guided study group for students enrolled in CHEM 215-3. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**CHEM 217-1 Accelerated Organic Chemistry I (1 Unit)** Primarily for chemistry majors and students in ISP. Basic concepts of structure, stereochemistry, and reactivity of organic compounds. The chemistry of hydrocarbons and alcohols. No P/N registration. Prerequisites: CHEM 132-0 and CHEM 142-0, or CHEM 152-0 and CHEM 162-0, or CHEM 172-0 and CHEM 182-0 (C- or better), or department placement. Must be taken concurrently with CHEM 237-1. Students may not receive credit for both CHEM 217-1 and 212-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 217-2 Accelerated Organic Chemistry II (1 Unit)** Primarily for chemistry majors and students in ISP. The chemistry of aromatic, carbonyl, and nitrogen compounds; characterization of organic substances by chemical and spectral methods; reaction mechanisms. No P/N registration. Prerequisites: CHEM 217-1 and CHEM 237-1 (C- or better). Must be taken concurrently with CHEM 237-2. Students may not receive credit for both CHEM 217-2 and 212-2. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**CHEM 217-3 Accelerated Organic Chemistry III (1 Unit)** Primarily for chemistry majors and students in ISP. The chemistry of poly-functional compounds of biological and medicinal interest. Modern organic syn-thesis, bioorganic chemistry, and recent developments in organic chemistry. No P/N registration. Prerequisites: CHEM 217-2 and CHEM 237-2 (C- or better). Must be taken concurrently with CHEM 235-3. Students may not receive credit for both CHEM 217-3 and 212-3. *Natural Sciences Distro Area*

**CHEM 220-0 Introductory Instrumental Analysis (1 Unit)** Introduction to basic laboratory techniques in analytical chemistry and spectroscopy. Topics include infrared and UV-visible spectroscopy, gas and liquid chromatography, elemental and thermal analysis, simple x-ray diffraction, error analysis, and literature searching techniques. Prerequisites:

CHEM 132-0 and CHEM 142-0, or CHEM 152-0 and CHEM 162-0, or CHEM 172-0 and CHEM 182-0 (C- or better), or equivalent.

**CHEM 235-1 Organic Chemistry Lab I (0.34 Unit)** Standard laboratory techniques in organic chemistry will be covered. Techniques will focus on the isolation and purification of organic compounds as well as the use of spectroscopic methods to determine identity and purity. Prerequisite: CHEM 132-0 and CHEM 142-0, or CHEM 152-0 and CHEM 162-0, or CHEM 172-0 and CHEM 182-0 (C- or better); or qualifying score on the Chemistry Placement Exam. Must be taken concurrently with CHEM 215-1.

**CHEM 235-2 Organic Chemistry Lab II (0.34 Unit)** Complete laboratory experiments focusing on standard synthetic organic chemistry will be conducted each week. Students will complete a prelab worksheet including stoichiometric calculations, prediction of reaction outcome, and identification of safety protocols. Prerequisite: Grade of C- or better in CHEM 215-1 and CHEM 235-1. Must be taken concurrently with CHEM 215-2.

**CHEM 235-3 Organic Chemistry Lab III (0.34 Unit)** Current laboratory practices for organic synthesis will be introduced. Reactions will include mechanically complex multi-step process for the preparation of compounds related to topical themes from academic research and industrial chemistry. Synthetic targets will include complex small molecules, polymers, and molecules of biological relevance. Prerequisite: Grade of C- or better in CHEM 215-2 and in CHEM 235-2. Must be taken concurrently with CHEM 215-3 or CHEM 217-3.

**CHEM 237-1 Accelerated Organic Chemistry Laboratory I (0.34 Unit)**

Primarily for chemistry majors and students in ISP. Molecular modeling, unknown identification by spectroscopic methods, and experimental techniques of modern chemistry emphasizing reactions of alkanes, alkenes, alkyl halides, alcohols, and carbonyls. Prerequisites: CHEM 132-0 and CHEM 142-0, or CHEM 152-0 and CHEM 162-0, or CHEM 172-0 and CHEM 182-0 (C- or better), or equivalent. Must be taken concurrently with CHEM 217-1. Students may not receive credit for both CHEM 237-1 and 232-1.

**CHEM 237-2 Accelerated Organic Chemistry Laboratory II (0.34 Unit)**

Primarily for chemistry majors and students in ISP. Techniques of modern organic chemistry including NMR spectroscopy and reactions such as electrophilic aromatic substitution, esterification, Grignard reaction, aldol condensation, Robinson annulation, and Diels-Alder reaction. Prerequisites: CHEM 217-1 and CHEM 237-1 (C- or better). Must be taken concurrently with CHEM 217-2. Students may not receive credit for both CHEM 237-2 and 232-2.

**CHEM 302-0 Principles of Inorganic Chemistry (1 Unit)** Topics in advanced inorganic chemistry. CHEM 302-0 and CHEM 402-0 are taught together. Prerequisite: CHEM 333-0 or consent of instructor.

**CHEM 303-0 Principles of Physical Chemistry (1 Unit)** An overview of advanced topics in physical chemistry. CHEM 303-0 and CHEM 403-0 are taught together. Prerequisites: CHEM 342-1 and CHEM 342-2 and CHEM 342-3.

**CHEM 305-0 Chemistry of Life Processes (1 Unit)** Topics in the chemistry and biochemistry of life processes. Taught with CHEM 405-0. Prerequisites: CHEM 215-3 or CHEM 212-3 or 217-3 (C- or better); and 1 biochemistry course; or consent of instructor.

**CHEM 306-0 Environmental Chemistry (1 Unit)** Topics in the physical chemistry of the environment. Taught with CHEM 406-0. Prerequisites: CHEM 215-2 or CHEM 212-3 or 217-3 (C- or better); MATH 230-2; PHYSICS 135-1 and PHYSICS 135-2; or consent of instructor.

**CHEM 307-0 Supramolecular Design of Materials and Nanostructures (1 Unit)**

Introduction to frontier research at the interface of chemistry and materials science. CHEM 307-0 and CHEM 407-0 are taught together. Prerequisites: CHEM 215-3 or CHEM 212-3 or 217-3 (C- or better).

**CHEM 308-0 Design, Synthesis, and Applications of Nanomaterials (1 Unit)** Fabrication, chemical synthesis, assembly, and characterization of controlled-dimensionality materials, including metals, semiconductors, oxides, polymers, and mesoporous scaffolds. Interfacial phenomena and particle stability, nano forms of carbon, and material design. Taught with CHEM 408-0. Prerequisite: 1 quarter of physical chemistry or consent of instructor.

**CHEM 309-0 Polymer Chemistry (1 Unit)** This course will cover the design and synthesis of polymers, including reaction mechanisms, characterization, and structure-property relationships. CHEM 309-0 is taught with CHEM 409-0. Prerequisites (for undergraduates only): CHEM 215-3 or CHEM 212-3 or 217-3 (C- or better); and one of the following courses: CHEM 307-0, CHEM 313-0, CHEM 319-0, CHEM 412-0, or CHEM 415-0.

**CHEM 310-1 Physical Organic Chemistry I (1 Unit)** An introduction to the concepts and methods of physical organic chemistry, including: molecular orbital theory, orbital symmetry and reactivity, conformational analysis and stereochemistry, stereoelectronic effects, intermolecular forces and solvation, transition state theory, free energy relationships and kinetic isotope effects, and reactive intermediates. Prerequisites: Students must have completed CHEM 215-3 or CHEM 217-3 or equivalent to enroll.

**CHEM 310-2 Physical Organic Chemistry II (0 Unit)** Expansion on the concepts and practices of physical organic chemistry including: orbital symmetry and reactivity, energy surfaces and Marcus theory, single-electron transfer reactions, solvent effects, nucleophilic and electrophilic reactivity, photochemistry and photocatalysis, organic electronic materials. Prerequisites: CHEM 215-3 or CHEM 217-3 or equivalent. CHEM 310-1 strongly recommended.

**CHEM 313-0 Advanced Organic Chemistry 1. Advanced concepts of organic reactivity and selectivity in synthesis. (1 Unit)** Strategies and tactics involved in complex target synthesis. Modern reaction classes as applied to chemical synthesis, coupled to in-depth discussion of the underlying key principles of synthesis design and execution, are covered in the class. Students will gain experience in problem solving, creative thinking, structural analysis and presentation skills. Prerequisites: CHEM 215-3 or CHEM 212-3 or 217-3 (C- or better).

**CHEM 314-0 Principles of Chemical Biology (1 Unit)** Introduction to using chemical principles in biology and medicine. Experimental techniques and experiments in chemical biology. Suitable for students in chemistry, engineering, and biology. Taught with CHEM 415-0. Prerequisites: CHEM 215-3 or CHEM 212-3 or 217-3 (C- or better); and 1 quarter of biology; or consent of instructor.

**CHEM 316-0 Medicinal Chemistry: the Organic Chemistry of Drug Design and Action (1 Unit)** Introduction to principles of drug design and mechanisms of drug action from a chemical viewpoint. Historical introduction, drug design and development, receptors, enzymes and enzyme inhibitors, DNA, drug metabolism, and prodrugs. Prerequisites: CHEM 215-3 or CHEM 212-3 (C- or better); or consent of instructor.

**CHEM 319-0 Advanced Organic Synthesis - Concepts and Applications (1 Unit)** Synthesis of natural products and other medicinally relevant organic compounds. Retrosynthetic analysis, substructure keying, and pattern recognition. Classic and modern organic reactions.

Terpenes, alkaloids, polyketides, steroids, proteins, and pharmaceuticals. Prerequisites: CHEM 215-3 or CHEM 212-3 or 217-3 (C- or better).

**CHEM 333-0 Inorganic Chemistry (1 Unit)** Descriptive chemistry of some important elements. Current concepts and models of chemical bonding. Prerequisites: 2 200-or 300-level chemistry courses.

**CHEM 342-1 Thermodynamics (1 Unit)** Laws of applications of thermodynamics. Thermochemistry, chemical potentials, solution thermodynamics, nonideal gases. Prerequisites: CHEM 132-0 or CHEM 152-0 or CHEM 172-0 or CHEM 215-3 or CHEM 212-3 or CHEM 217-3 (C- or better); and MATH 230-1.

**CHEM 342-2 Quantum Mechanics and Spectroscopy (1 Unit)** Quantum mechanics with emphasis on atomic and molecular electronic structure. Electronic, vibrational, rotational, and magnetic resonance spectroscopy. Prerequisites: MATH 230-2; PHYSICS 135-1 and 135-2; and CHEM 342-1.

**CHEM 342-3 Kinetics and Statistical Thermodynamics (1 Unit)** Chemical kinetics, including experimental techniques and theories of rate processes. Statistical mechanics, including Boltzmann distribution, partition functions, and applications to thermodynamics. Prerequisites: CHEM 342-1 and CHEM 342-2 (C- or better).

**CHEM 348-0 Physical Chemistry for ISP (1 Unit)** Gas laws and properties; kinetic theory; first, second, and third laws; phase equilibria; mixtures, phase diagrams, statistical thermodynamics, kinetics. Prerequisites: ISP enrollment; CHEM 172-0 and CHEM 182-0 (C- or better); MATH 281-1, MATH 281-2, MATH 281-3; or consent of department.

**CHEM 350-1 Advanced Laboratory 1 (1 Unit)** Advanced laboratory techniques in synthetic and analytical chemistry and spectroscopy: mass spectrometry, chromatography, NMR spectroscopy, and organic synthesis techniques. Prerequisites: CHEM 220-0; and CHEM 215-3 or CHEM 212-3, and CHEM 235-3 (C- or better); or equivalent.

**CHEM 350-2 Advanced Laboratory 2 (1 Unit)** Advanced laboratory techniques in synthetic and analytical chemistry and spectroscopy, polymer characterization methods, electrochemistry, x-ray crystallography, atomic spectroscopy, and inorganic synthesis techniques. Prerequisites: CHEM 333-0 and CHEM 350-1 (C- or better) or equivalent.

**CHEM 350-3 Advanced Laboratory 3 (1 Unit)** Advanced laboratory techniques in synthetic and analytical chemistry and spectroscopy: infrared and Raman spectroscopy, electronic spectroscopy, fast kinetics, organic and inorganic synthesis techniques in a self-guided project. Prerequisites: CHEM 342-2 or equivalent and CHEM 350-2 (C- or better).

**CHEM 393-0 Green Chemistry (1 Unit)** Practices of environmentally benign chemistry as applied to the chemical industry. Introduction to the concept and discipline of green chemistry; growth and expansion of the discipline in historical context from its origins in the early 1990s to the present. Prerequisites: CHEM 215-2 or CHEM 217-2 (C- or better).

**CHEM 398-0 Undergraduate Seminar (1 Unit)** Advanced work for superior students through supervised reading, research, and discussion. Prerequisite: consent of department.

**CHEM 399-0 Independent Study (1 Unit)** Faculty-directed research. Must be taken P/N for first 2 quarters. Prerequisite: consent of department.

## Chemistry Major

The major is recommended for students planning careers in chemistry. It is suitable preparation for graduate study in chemistry or medical school and for work as a professional chemist. The curriculum includes

related courses in mathematics and physics as well as core courses and a concentration in chemistry.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Department Courses (16.7–18.04 units)</b>	
<b>14.7–16.04 core units providing a solid basis in chemistry</b>	
CHEM 110-0	Quantitative Problem Solving in Chemistry
& CHEM 131-0	and Fundamentals of Chemistry I
& CHEM 141-0	and Fundamentals of Chemistry Laboratory I
& CHEM 132-0	and Fundamentals of Chemistry II
& CHEM 142-0	and Fundamentals of Chemistry Laboratory II
or CHEM 151-0	General Chemistry I
& CHEM 161-0	and General Chemistry Laboratory I
& CHEM 152-0	and General Chemistry II
& CHEM 162-0	and General Chemistry Laboratory II
or CHEM 171-0	Advanced General Inorganic Chemistry
& CHEM 181-0	and Advanced General Inorganic Chemistry
& CHEM 172-0	Laboratory
& CHEM 182-0	and Advanced General Physical Chemistry
	and Advanced General Physical Chemistry
	Laboratory
CHEM 220-0	Introductory Instrumental Analysis
CHEM 217-1	Accelerated Organic Chemistry I
& CHEM 237-1	and Accelerated Organic Chemistry Laboratory I
& CHEM 217-2	and Accelerated Organic Chemistry II
& CHEM 237-2	and Accelerated Organic Chemistry Laboratory II
& CHEM 217-3	and Accelerated Organic Chemistry III
& CHEM 235-3	and Organic Chemistry Lab III
Students who complete the non-majors organic sequence CHEM 215-1, CHEM 215-2, and CHEM 215-3 with associated labs, and decide later to major in chemistry, are permitted to use these courses in place of CHEM 217-1, CHEM 217-2, and CHEM 217-3 and associated labs.	
CHEM 333-0	Inorganic Chemistry
CHEM 342-1	Thermodynamics
& CHEM 342-2	and Quantum Mechanics and Spectroscopy
& CHEM 342-3	and Kinetics and Statistical Thermodynamics
CHEM 350-1	Advanced Laboratory 1
& CHEM 350-2	and Advanced Laboratory 2
& CHEM 350-3	and Advanced Laboratory 3
2 courses from one of these concentration areas:	
Biochemistry (p. 265)	
Environmental Chemistry (p. 265)	
Inorganic Chemistry (p. 265)	
Organic Chemistry (p. 265)	
Physical Chemistry (p. 265)	
Materials/Nanotechnology (p. 265)	
Self-designed Concentration (p. 266)	
<b>Related Courses (Units depend on mathematics courses taken.)</b>	
BIOL_SCI 301-0	Principles of Biochemistry
or BIOLOGY 241-0	Biochemistry, Molecular and Cell Biology for ISP - 2
MATH 220-1	Single-Variable Differential Calculus
& MATH 220-2	and Single-Variable Integral Calculus

or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 230-1 & MATH 230-2	Multivariable Differential Calculus and Multivariable Integral Calculus
or MATH 281-1 & MATH 281-2	Accelerated Mathematics for ISP. First Year and Accelerated Mathematics for ISP. First Year
or MATH 285-2 & MATH 285-3	Accelerated Mathematics for MMSS and Accelerated Mathematics for MMSS
or MATH 290-2 & MATH 290-3	MENU: Linear Algebra and Multivariable Calculus and MENU: Linear Algebra and Multivariable Calculus
or MATH 291-2 & MATH 291-3	MENU: Intensive Linear Algebra and Multivariable Calculus and MENU: Intensive Linear Algebra and Multivariable Calculus
PHYSICS 125-1 & PHYSICS 125-2 & PHYSICS 125-3 & PHYSICS 126-1 & PHYSICS 126-2 & PHYSICS 126-3  or PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3  or PHYSICS 140-1 & PHYSICS 140-2 & PHYSICS 140-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	General Physics ISP and General Physics for ISP and General Physics for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP  General Physics and General Physics and General Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory  Fundamentals of Physics and Fundamentals of Physics and Fundamentals of Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory  and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory

<sup>1</sup> Only applicable when class topic is "The Chemistry and Materials of Alternative Energy"

## Inorganic Chemistry

Course	Title
CHEM 302-0	Principles of Inorganic Chemistry
CHEM 411-0	Organic Spectroscopy
CHEM 432-0	X-Ray Crystallography
CHEM 433-0	Structural Inorganic Chemistry
CHEM 434-0	Inorganic Chemistry
CHEM 435-0	Advanced Inorganic Chemistry

## Organic Chemistry

Course	Title
CHEM 309-0	Polymer Chemistry
CHEM 310-1	Physical Organic Chemistry I
CHEM 310-2	Physical Organic Chemistry II
CHEM 313-0	Advanced Organic Chemistry 1. Advanced concepts of organic reactivity and selectivity in synthesis.
CHEM 314-0	Principles of Chemical Biology
CHEM 316-0	Medicinal Chemistry: the Organic Chemistry of Drug Design and Action
CHEM 319-0	Advanced Organic Synthesis - Concepts and Applications
CHEM 410-0	Physical Organic Chemistry
CHEM 411-0	Organic Spectroscopy
CHEM 412-0	Organometallic Reaction Mechanisms
CHEM 415-0	Advanced Organic Chemistry

## Physical Chemistry

Course	Title
CHEM 442-1	Quantum Chemistry
CHEM 442-2	Quantum Chemistry
CHEM 443-0	Kinetics and Spectroscopy
CHEM 444-0	Elementary Statistical Mechanics
CHEM 445-0	Advanced Physical & Analytical Chemistry
CHEM 448-0	Computational Chemistry

## Materials/Nanotechnology

Course	Title
CHEM 307-0	Supramolecular Design of Materials and Nanostructures <sup>1</sup>
or MAT_SCI 336-0	Synthetic Design of New Materials
CHEM 308-0	Design, Synthesis, and Applications of Nanomaterials
CHEM 309-0	Polymer Chemistry
MAT_SCI 201-0	Introduction to Materials Science and Engineering Principles
MAT_SCI 301-0	Introduction to Materials Science and Engineering Principles
MAT_SCI 331-0	Soft Materials
MAT_SCI 376-0	Nanomaterials

<sup>1</sup> Students may not count both CHEM 307-0 and MAT\_SCI 336-0 toward their Chemistry major.

## Concentration Courses

- Areas of concentration draw upon courses within the department as well as in other departments.
- Concentration courses are typically taken during the final year of undergraduate study.
- The concentration areas, along with eligible courses, are:

## Biochemistry

Course	Title
CHEM 305-0	Chemistry of Life Processes
CHEM 314-0	Principles of Chemical Biology
CHEM 316-0	Medicinal Chemistry: the Organic Chemistry of Drug Design and Action
CHEM 432-0	X-Ray Crystallography
BIOL_SCI 361-0	Protein Structure and Function

## Environmental Chemistry

Course	Title
CHEM 306-0	Environmental Chemistry
CHEM 393-0	Green Chemistry
CHEM 445-0	Advanced Physical & Analytical Chemistry <sup>1</sup>
CIV_ENV 260-0	Environmental Systems and Processes
CIV_ENV 314-0	Organic Geochemistry
CIV_ENV 365-0	Environmental Laboratory
CIV_ENV 367-0	Chemical Processes in Aquatic Systems

## Self-designed Concentration

If the concentrations above do not meet their interests, students may design a concentration with approval of the Director of Undergraduate Studies in Chemistry. A concentration may consist of 2 courses from the areas above or with a common theme.

## Honors in Chemistry

Majors who have done outstanding work in the classroom and research laboratory may be eligible for graduation with honors in chemistry. Students who intend to submit a senior thesis should send an e-mail message (including the name of the research adviser) to the director of undergraduate studies by fall of senior year. To be eligible for honors, a student must meet minimum GPA requirements, engage in original research during at least two quarters of CHEM 399-0 Independent Study, and write a senior thesis on this research. The CHEM 399-0 credits are not required for and do not count toward the chemistry major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the Director of Undergraduate Studies in Chemistry and see Honors in the Major (p. 222).

## Chemistry Minor

The minor in chemistry allows majors in other fields to complete a significant portion of the coursework required for the chemistry major. It allows the flexible selection of coursework from the traditional subdisciplines of organic, inorganic, physical, and analytical chemistry.

Course	Title
<b>Prerequisites</b>	
CHEM 132-0 & CHEM 142-0	Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II
or CHEM 152-0 & CHEM 162-0	General Chemistry II and General Chemistry Laboratory II
or CHEM 172-0 & CHEM 182-0	Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory
or equivalent	

Chemistry courses at the 300 level may have additional chemistry, physics, and/or mathematics prerequisites.

### Minor Requirements (6 units plus additional units for required labs)

Six 200- or 300- level full-credit courses <sup>1</sup>

<sup>1</sup> Exclusive of CHEM 201-0 Chemistry of Nature and Culture, CHEM 398-0 Undergraduate Seminar, CHEM 399-0 Independent Study, or all 0.34-credit lab courses.

- Life science majors and premedical students are advised to take:

Course	Title
CHEM 215-1 & CHEM 235-1	Organic Chemistry I and Organic Chemistry Lab I
& CHEM 215-2	and Organic Chemistry II
& CHEM 235-2	and Organic Chemistry Lab II
& CHEM 215-3	and Organic Chemistry III
& CHEM 235-3	and Organic Chemistry Lab III

or CHEM 217-1 & CHEM 237-1 & CHEM 217-2 & CHEM 237-2 & CHEM 217-3 & CHEM 235-3	Accelerated Organic Chemistry I and Accelerated Organic Chemistry Laboratory I and Accelerated Organic Chemistry II and Accelerated Organic Chemistry Laboratory II and Accelerated Organic Chemistry III and Organic Chemistry Lab III
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3 additional Chemistry courses

- Physical science majors are advised to take:

Course	Title
CHEM 342-1	Thermodynamics
& CHEM 342-2	and Quantum Mechanics and Spectroscopy
& CHEM 342-3	and Kinetics and Statistical Thermodynamics

3 additional Chemistry courses

- Students with interests in materials science, earth and planetary science, or environmental science should take:

Course	Title
CHEM 215-1 & CHEM 235-1	Organic Chemistry I and Organic Chemistry Lab I
CHEM 215-2 & CHEM 235-2	Organic Chemistry II and Organic Chemistry Lab II
CHEM 333-0	Inorganic Chemistry

3 additional Chemistry courses

- Other programs for the minor may be designed with departmental approval to suit individual needs; interested students should contact the Director of Undergraduate Studies in Chemistry. (<https://www.chemistry.northwestern.edu/undergraduate/programs/advising-research.html>)

## Chemistry Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The Integrated Science Program is a highly selective BA program in the Weinberg College of Arts and Sciences (see Integrated Science Program (p. 345)). Students majoring in ISP who wish to complete a second major in chemistry must take these courses:

Course	Title
<b>Chemistry courses required for the ISP major</b>	
Students doing the second major in chemistry may not make substitutions	
CHEM 217-1 & CHEM 237-1	Accelerated Organic Chemistry I and Accelerated Organic Chemistry Laboratory I
CHEM 348-0	Physical Chemistry for ISP
<b>Additional core courses required for the second major in chemistry:</b>	
CHEM 217-2 & CHEM 237-2	Accelerated Organic Chemistry II and Accelerated Organic Chemistry Laboratory II
& CHEM 217-3 & CHEM 235-3	and Accelerated Organic Chemistry III and Organic Chemistry Lab III
CHEM 220-0	Introductory Instrumental Analysis
CHEM 333-0	Inorganic Chemistry

CHEM 350-1 & CHEM 350-2 & CHEM 350-3	Advanced Laboratory 1 and Advanced Laboratory 2 and Advanced Laboratory 3
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**Concentration**

Two courses from a selected concentration area in the Chemistry major<sup>1</sup>

<sup>1</sup> See concentration areas and course lists on the Chemistry Major page (p. 264).

## Chemistry BA/MS

Students who have done outstanding work during their first three years and have a professional interest in chemistry may apply for the BA/MS program when they are within 4 courses of completing undergraduate degree requirements. By the end of the third year the applicant should have completed nearly all of the 300-level course requirements, all or nearly all of the Weinberg College requirements (p. 216), and at least 1 term of independent study.

Information about degree requirements can be found in the Graduate Catalog section describing the combined BA/MS program in Chemistry (<https://catalogs.northwestern.edu/tgs/chemistry/chemistry-bach-mast/>).

Undergraduate students interested in pursuing this program should contact the Director of Undergraduate Studies in Chemistry (<https://www.chemistry.northwestern.edu/undergraduate/programs/advising-research.html>).

## Chicago Field Studies

[internships.northwestern.edu](http://internships.northwestern.edu)

Chicago Field Studies (CFS) is an experiential-learning program that helps a student intern in a field of their choice while thinking critically about that work in an attached course for credit. CFS is committed to the notion that academically-framed internships allow students to explore their interests and gain practical experience while learning to contemplate the currents that shape our working lives socially, historically, economically, or otherwise by field. CFS maintains relationships with an array of internship sites across Chicagoland and beyond, and the program runs interdisciplinary courses each quarter (Fall - Summer) that focus on business, public health, law, and more. Students must apply to CFS before enrolling in a CFS course. Accepted students who apply without an internship do the guided CFS internship search process several months before their CFS enrollment. Students can also apply with internships secured on their own. CFS welcomes students from across Northwestern except for undergraduates in their first year. (First-years can apply during their first year to do CFS in the Summer or Fall after their first year.) Some CFS courses may count towards WCAS degree requirements or major/minor requirements in some departments or programs.

## Chicago Field Studies Courses

Note that CFS courses do not currently count towards Foundational Disciplines. Where a Weinberg College Distribution Area is listed below, these are credits towards the former WCAS Degree Requirements. A student may use a maximum of one unit of Distribution Area credit towards that area (even if the student earns more than one unit for the course). Where more than one Distribution Area is listed for a course, the student may choose where to apply that one unit of credit. More information about distribution requirements and Interdisciplinary Studies distribution courses may be found in the Undergraduate Catalog (<https://>

[www.registrar.northwestern.edu/registration-graduation/undergraduate-catalog.html](http://www.registrar.northwestern.edu/registration-graduation/undergraduate-catalog.html)) edition for 2022-2023.

**CFS 291-0 Analysis of Field Experience (0.25-1 Unit)** Asynchronous online course for students who intern 10-40 hours a week. Requires students to read, reflect upon, and discuss the structure and purpose of organizations as well as various workplace topics. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying.

**CFS 387-0 Field Studies in the Environment & Sustainability (1-4 Units)** Explores theoretical, geographic, and historical stakes of sustainability approaches and environmental professions. Students intern 10-40 hours a week. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. *Social Behavioral Sciences Distro Area*

**CFS 388-0 Field Studies in Business Culture (1-4 Units)** Online course for students who intern 10-40 hours a week in organizations throughout the world. Focuses on critical and historical issues shaping business culture. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. *Course Meets Online*

**CFS 391-0 Field Studies in Social Justice (1-4 Units)** Approaches to social change with focus on particular justice issues and current events. Students intern 10-40 hours a week in advocacy, policy, and social justice organizations. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. *Social Behavioral Sciences Distro Area*

**CFS 392-0 Field Studies in Public Health (1-4 Units)** Explores foundational concepts and current issues in Public Health. Students earn 10-40 hours a week in health- and medicine-related organizations. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. *Social Behavioral Sciences Distro Area*

**CFS 393-0 Field Studies in the Modern Workplace (2-4 Units)** Workplace culture historically and political theory of labor. Students intern 10-40 hours a week in various fields. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. Credits available may vary by quarter. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**CFS 394-0 Legal Field Studies (1-4 Units)** Contemporary issues and workplace culture in the legal field. Students intern 10-40 hours a week in legal organizations. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. Credits available may vary by quarter. *Social Behavioral Sciences Distro Area*

**CFS 395-0 Business Field Studies (2-4 Units)** Contemporary issues in business professions. Students intern 10-40 hours a week in business (primarily finance, consulting, or marketing). Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. Credits available may vary by quarter. *Social Behavioral Sciences Distro Area*

**CFS 397-0 Field Studies in Civic Engagement (1-4 Units)** Forms of civic engagement with emphasis on local issues and approaches. Students intern 10-40 hours a week in civic, educational, legal, governmental, nonprofit, or community-based organizations. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying. *Social Behavioral Sciences Distro Area*

**CFS 398-0 Field Studies in Humanities (1-4 Units)** Labor issues through arts and cultural history, with emphasis on humanities, arts, and media in the public sphere. Students intern 10-40 hours a week in fields including but not limited to arts and cultural organizations. Application and acceptance to CFS required. May be subject to internship course-credit limits; students should consult their academic adviser before applying.

*Literature Fine Arts Distro Area*

## Chinese

See Asian Languages and Cultures (p. 242).

## Classics

classics.northwestern.edu

Classics majors and minors study the language, literature, history, and culture of Greek and Roman antiquity. The department offers a wide range of topics and has strengths in Greek and Latin literature, mythology, Greek history, the ancient economy, and ancient philosophical writing. Students may also study the reception of classical antiquity in medieval through contemporary cultures by taking classical traditions courses offered by other departments. The wide range of choices includes philosophy, religion, political theory, art history, film studies, English, and comparative literature.

Classics majors may pursue a concentration in Latin, Greek, or both languages. For a classics minor, students may choose a concentration with readings in Latin or in Greek or a classical studies concentration with sources in English translation only. Additional information about classics programs and courses is available on the department website or in the department office.

## The Teaching of Latin

For information about teaching careers in Latin and opportunities for mentoring and classroom observation, see the director of undergraduate studies in the Department of Classics.

## Study Abroad

The department strongly encourages students to undertake study abroad for a summer, a term, or the academic year at, for example, the Intercollegiate Center for Classical Studies in Rome, the summer program at the American School of Classical Studies in Athens, or Northwestern's own program Athens: Ancient Culture and Modern City (<https://classics.northwestern.edu/undergraduate/study-abroad.html>). Interested students should consult with the director of undergraduate studies in fall of the previous year to ensure sufficient time to prepare applications and plan for appropriate credit toward the major.

## Language Placement

Students must either complete the 100-level language sequence before enrolling in GREEK 201-1 Introduction to Greek Literature or LATIN 201-1 Introduction to Latin Literature or test into the 200-level courses. Completion of the 200-level series or permission of the instructor is a prerequisite for enrollment in 300-level language courses. Placement results may not be counted for credit toward the total number of courses required, e.g., the 6 additional courses for the major. More advanced coursework must be completed instead.

## Classical Traditions Courses

Offered in departments other than classics, classical traditions courses give significant attention to ancient Greece or Rome, or to the use of Greek or Roman culture in some later tradition. They may be used to satisfy certain major and minor requirements. To determine which current courses meet the criteria, students should consult the director of undergraduate studies. Courses that have recently met the criteria include:

Course	Title
PHIL 210-1	History of Philosophy - Ancient
PHIL 310-0	Studies in Ancient Philosophy
POLI_SCI 301-0	Classical Political Theory
THEATRE 373-1	Acting II: Analysis and Performance

## Programs of Study

- Classics Major (p. 270)
- Classics Minor Concentrations (p. 271)

See below for Courses with Readings in Greek (p. 269), and Courses with Readings in English (p. 269).

## Courses with Readings in Latin

**LATIN 101-1 Elementary Latin (1 Unit)** Classical Latin vocabulary, grammar, and syntax with graded readings for translation. Course one of three.

**LATIN 101-2 Elementary Latin (1 Unit)** Classical Latin vocabulary, grammar, and syntax with graded readings for translation. Course two of three. Prerequisite: LATIN 101-1 or departmental placement.

**LATIN 101-3 Elementary Latin (1 Unit)** Classical Latin vocabulary, grammar, and syntax with graded readings for translation. Course three of three. Prerequisite: LATIN 101-2 or departmental placement.

**LATIN 201-1 Introduction to Latin Literature (1 Unit)** Grammar and vocabulary review. Readings in Cicero, Virgil, and Catullus; emphasis on literary analysis. Prerequisite: LATIN 101-3 or department placement.

**LATIN 201-2 Introduction to Latin Literature (1 Unit)** Grammar and vocabulary review. Readings in Cicero, Virgil, and Catullus; emphasis on literary analysis. Prerequisite: LATIN 201-1 or department placement.

**LATIN 201-3 Introduction to Latin Literature (1 Unit)** Grammar and vocabulary review. Readings in Cicero, Virgil, and Catullus; emphasis on literary analysis. Prerequisite: LATIN 201-2 or department placement.

### LATIN 310-0 Readings in Latin Literature (1 Unit)

Selected topics and authors including Virgil, Horace, Ovid, Cicero, Tacitus, and Seneca.

Prerequisite: LATIN 201-3 or consent of instructor. May be repeated for credit with different topics.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**LATIN 313-0 Latin Prose Composition: Advanced Syntax & Composition (1 Unit)** Rapid review of Latin morphology and basic grammar, followed by careful study of the syntax of Latin prose and by practice in prose composition. Prerequisite: LATIN 201-3 or equivalent.

**LATIN 399-0 Independent Study (1 Unit)** Individual program of study under the direction of a faculty member. For advanced students only. Permission of department required.

## Courses with Readings in Greek

**GREEK 115-1 Accelerated Elementary Ancient and Biblical Greek (1 Unit)** This is the first in an accelerated two-quarter series designed to teach students to read ancient Greek texts, from the biblical New Testament to Homeric poetry and Platonic philosophy. These two quarters will teach all the fundamentals of grammar and vocabulary and lead students directly into a course dedicated to reading the Greek New Testament, and classical Greek texts thereafter. Usually taught in the Winter.

**GREEK 115-2 Accelerated Elementary Ancient and Biblical Greek (1 Unit)** This is the second in an accelerated two-quarter series designed to teach students to read ancient Greek texts, from the biblical New Testament to Homeric poetry and Platonic philosophy. These two quarters will teach all the fundamentals of grammar and vocabulary and lead students directly into a course dedicated to reading the Greek New Testament, and classical Greek texts thereafter. Usually taught in the Spring. Prerequisite: GREEK 115-1 or departmental placement.

**GREEK 201-1 Introduction to Greek Literature (1 Unit)** Review of basic grammar and vocabulary. Representative selections from Greek authors in their historical and cultural contexts. Prerequisite: GREEK 115-2, or departmental placement.

**GREEK 201-2 Introduction to Greek Literature (1 Unit)** Review of basic grammar and vocabulary. Representative selections from Greek authors in their historical and cultural contexts. Prerequisite: GREEK 201-1, or departmental placement.

**GREEK 201-3 Introduction to Greek Literature (1 Unit)** Review of basic grammar and vocabulary. Representative selections from Greek authors in their historical and cultural contexts. Prerequisite: GREEK 201-2, or departmental placement.

### GREEK 301-0 Readings in Greek Literature (1 Unit)

Selected topics and authors including Homer, Plato, Euripides, and Greek lyric poetry.

Prerequisite: GREEK 201-3 or consent of instructor. May be repeated for credit with different topics.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GREEK 399-0 Independent Study (1 Unit)** Individual program of study under the direction of a faculty member. For advanced students only. Permission of department required.

## Courses with Readings in English

These courses offer an understanding of classical culture and its influence in history, literature, and art. There are no prerequisites in Greek or Latin.

**CLASSICS 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**CLASSICS 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**CLASSICS 110-0 A Study of Scientific Vocabulary Through Classical Roots (1 Unit)** Greek and Latin etymology in the vocabulary of the sciences. Designed primarily for science or medical students.

**CLASSICS 210-0 The World of Homer (1 Unit)** Introduction to the history and material culture of Iron Age Greece. Society, economy, art, and archaeology of the Greek world that gave rise to the Homeric epic. CLASSICS 210-0 and HUM 205-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area*

**CLASSICS 211-0 Greek History and Culture: From Homer to Alexander the Great (1 Unit)** An introduction to the history, culture, and peoples of the ancient Greek world from the age of Homer (c. 7th century BCE) to Alexander the Great (323 BCE). Daily life; political, social, artistic, and intellectual developments. Special attention paid to Athenian democracy as well as the politics of other city-states, including Sparta. Primary sources include texts, art, and archaeology. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 212-0 Rome: Culture and Empire (1 Unit)** Development and character of the Roman Republic and Empire, emphasizing political and social institutions. Roman origins of Europe's politics, religion, literature, and ideas. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area*

**CLASSICS 245-0 Classics and the Cinema (1 Unit)** Analysis of how literary and social/political assumptions intersect in the reception of two related dramatic forms, one originating in 5th century Greece, the other in 20th century United States. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 250-0 Literatures of the Ancient World (1 Unit)** Introduction to ancient Mediterranean literatures through study of thematically related texts from various cultures and periods and to interpretive techniques and debates about them. Content varies; may be repeated for credit with different topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 260-0 Classical Mythology (1 Unit)** Introduction to Greek and Roman traditional narratives. Emphasis on the social, political, and religious values that they engage. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 310-0 Archaeology of the Ancient Mediterranean (1 Unit)** Content varies; may be repeated for credit with different topic. Recent topics: The Amazons - Warrior Women of Greek Myth and History; The Archaeology of Pompeii, Herculaneum, and Stabiae. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 311-SA On-Site Archaeology of the Ancient Mediterranean (1 Unit)** Study of Greco-Roman archaeological sites and objects conducted on site as part of the study abroad program, Athens: Ancient Culture and Modern City. *Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 314-0 Topics in Ancient Science and Technology (1 Unit)** This course introduces students to the origins and histories of today's physical and quantitative sciences. Students gain understanding not only of the ways in which scientific knowledge has been generated and transmitted from the ancient past to the present, but also of the specific technical and quantitative methodologies through which the sciences

have been practiced. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**CLASSICS 320-0 Greek and Roman History (1 Unit)** Content varies; may be repeated for credit with different topic. Recent topics: Sophokles and Athens, The Foundation of Rome through Legends and Objects. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**CLASSICS 321-SA On-Site Greek and Roman History (1 Unit)** Study of Greco-Roman history conducted on site as part of the study abroad program, Athens: Ancient Culture and Modern City. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**CLASSICS 330-0 Ancient Economy (1 Unit)** Introduction to the preindustrial economy of the Roman Empire, highlighting its difference from postindustrial economies. Farming, transportation, demography, urbanism, technology, trade, and economic growth. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

#### **CLASSICS 340-0 Greek and Roman Drama (1 Unit)**

Analysis of key works of ancient drama, chiefly tragedy and comedy; their material setting in the Greco-Roman Mediterranean; ancient drama's literary and performance aspects and social, political, and economic contexts.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 350-0 Greek and Latin Literature (1 Unit)** Content varies; may be repeated for credit with different topic. Recent topics include Love in Antiquity, Roman Comedy, and Roman Literature and Imperialism. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 360-0 Origins of Greek Democracy (1 Unit)** Emergence of the world's first democracies in archaic Greece, 750-460 BCE. Topics include the rise of the city-state, tyranny, Sparta, the effects of military reform, the invention of written law, and the development and consequences of democratic ideology. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**CLASSICS 370-0 Greek and Roman Religion (1 Unit)** History and analysis of pagan religions of Greece and Rome and religions of the Roman Empire. Literary and material evidence; ancient and modern theories about ancient religions. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**CLASSICS 380-0 Classical Reception Studies (1 Unit)** Content varies; may be repeated for credit with different topic. This course focuses on how Greek and Roman sources (texts, images, material objects, figures, practices) have been utilized by post-antiquity actors in a variety of media, such as art, architecture, literature, music, cinema, theater, popular culture, etc. to make meaning in and for their own times (later-antiquity to contemporary times). *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**CLASSICS 390-0 Topics in Greco-Roman Civilization (1 Unit)** Content varies; may be repeated for credit with different topic. Recent topics: Materiality of Art and Archaeology of Roman Metals, Comparative Approaches to Ancient Empires.

**CLASSICS 395-0 Research Seminar (1 Unit)** Fundamental research skills through hands-on learning, and in-class work on an individual project. Students will learn how to use reference tools, allowing them to search, analyze and interpret literary texts, inscriptions, papyri and visual material. Course reflects current developments in Classics, and

emphasizes digital approaches. Required for the major. Prerequisite: junior or senior standing, or permission of the instructor.

**CLASSICS 397-0 Exhibiting Antiquity: The Culture and Politics of Display (1 Unit)** Examination of the construction of Mediterranean antiquity through modes of reception since 1750. Analysis of programs of collecting and display and the intersection of institutional and scholarly agendas. ART\_HIST 318-0, CLASSICS 397-0 and HUM 397-0 taught together; may receive credit for only 1 of these courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area*

**CLASSICS 399-0 Independent Study (1 Unit)** Individual program of study under the direction of a faculty member. For advanced students only. Permission of department required.

## **Classics Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The major in classics offers students three paths of study. Although no previous knowledge of Latin or Greek is required, all students are required to achieve competence in one of these ancient languages in order to work with primary sources in the original. Some may choose to complete advanced work in both languages.

With concentrations in Latin, Greek, or both languages, the major requirements allow some flexibility. Classics majors develop familiarity with the broad sweep of ancient history and literature and key analytical skills necessary to examine the record of Greek and Roman culture. They complete a demanding and distinctive course of study that stresses the development of important intellectual sensibilities—close reading, analytical clarity, thorough research, evaluation of evidence, logical analysis, effective writing, appreciation of nuance and subtleties, historical variability, and cultural differences. All majors complete a research project under the direction of a faculty member in a small 1-quarter seminar. Seniors pursuing honors will undertake an additional 2 quarters of research.

Each of the three tracks—Greek and Latin, Latin, or Greek—requires a minimum of 12 courses beyond the language prerequisites.

All majors are required to undertake a research project in connection with CLASSICS 395-0 Research Seminar. Topics vary from year to year. Instruction will be included in the use of traditional as well as digital research tools. Students may petition the director of undergraduate studies to substitute research conducted for a study abroad program.

### **Greek and Latin Concentration**

Course	Title
<b>Major Requirements: Greek and Latin Concentration (12 units)</b>	
Prerequisites: <sup>1</sup>	
GREEK 201-2 & LATIN 101-3 or LATIN 201-2 & GREEK 115-2	Introduction to Greek Literature and Elementary Latin  Introduction to Latin Literature and Accelerated Elementary Ancient and Biblical Greek

3 foundation courses in the first language (Greek or Latin) at the 201-3 level or above	
3 foundation courses in the second language (Greek or Latin) at the 200 or 300 level	
6 additional courses:	
CLASSICS 211-0	Greek History and Culture: From Homer to Alexander the Great

- CLASSICS 212-0 Rome: Culture and Empire  
 CLASSICS 395-0 Research Seminar  
 3 additional Greek, Latin, or classics courses, at least 2 of which must be at the 300 level or above (may include 1 classical traditions course with consent of the director of undergraduate studies)<sup>2</sup>

<sup>1</sup> Or equivalent placements—see Language Placement (p. 268)

<sup>2</sup> Excluding CLASSICS 110-0 A Study of Scientific Vocabulary Through Classical Roots

## Latin Concentration

Course	Title
<b>Major Requirements: Latin Concentration (12 units)</b>	
Prerequisite:	
LATIN 201-2	Introduction to Latin Literature <sup>1</sup>
3 language foundation courses in Latin:	
LATIN 201-3	Introduction to Latin Literature
and/or courses at the 300 level, depending on placement	
9 additional courses:	
CLASSICS 211-0	Greek History and Culture: From Homer to Alexander the Great
CLASSICS 212-0	Rome: Culture and Empire
CLASSICS 395-0	Research Seminar
6 additional Latin, Greek, or classics courses, at least 3 of which must be at the 300 level or above (may include Greek language courses at any level and up to 2 classical traditions courses with consent of the director of undergraduate studies) <sup>2</sup>	

<sup>1</sup> Or equivalent placement (see Language Placement (p. 268))

<sup>2</sup> Excluding CLASSICS 110-0 A Study of Scientific Vocabulary Through Classical Roots

## Greek Concentration

Course	Title
<b>Major Requirements: Greek Concentration (12 units)</b>	
Prerequisites:	
GREEK 201-2	Introduction to Greek Literature <sup>1</sup>
3 language foundation courses in Greek:	
GREEK 201-3	Introduction to Greek Literature
and/or courses at the 300 level, depending on placement	
9 Additional Courses:	
CLASSICS 211-0	Greek History and Culture: From Homer to Alexander the Great
CLASSICS 212-0	Rome: Culture and Empire
CLASSICS 395-0	Research Seminar
6 additional Greek, Latin, or classics courses, at least 3 of which must be at the 300 level or above (may include Latin language courses at any level and up to 2 classical traditions courses with consent of the director of undergraduate studies) <sup>2</sup>	

<sup>1</sup> Or equivalent placement (see Language Placement (p. 268))

<sup>2</sup> Excluding CLASSICS 110-0 A Study of Scientific Vocabulary Through Classical Roots

## Honors in Classics

Majors with strong academic records and an interest in pursuing honors should speak with the Director of Undergraduate Studies and submit an application form in junior year no later than the College reading period in Spring Quarter. Students should list a preliminary bibliography for the project approved by a faculty member who has agreed to serve as the thesis adviser. A one-page research proposal approved by the adviser is due at the end of the first week of the Fall Quarter of the senior year. The Honors Committee, consisting of the Director of Undergraduate Studies, the Honors Coordinator and a third Classics faculty member, will evaluate the proposal and vote on approval. During the fall and winter quarters of their senior year, students enroll in **CLASSICS 399-0**, Independent Study and complete a senior thesis. Students must be in residence during these terms. All honors theses are evaluated as passing or not-passing by the Honors Committee. Students whose theses and grades meet departmental criteria are recommended to the College for graduation with honors. For more information consult the **department website** or the director of undergraduate studies.

## Classics Minor Concentrations

Students may earn a minor in Latin, Greek, or classical studies. Each option allows students either to survey aspects of classical culture and traditions or to take a more focused cluster of courses. Unlike the Greek and Latin minors, the classical studies minor does not require study of an ancient language. Instead, it provides a framework for examining any aspect of Greek and Roman antiquity or its traditions and reception in medieval through contemporary Western culture.

Students majoring in classics may also earn a minor in classical studies, provided they do not double-count courses toward both the major and the minor, and they do not count toward the minor any courses in the language(s) of their major at or below the prerequisite level.

## Minor requirements: Latin concentration (6 units)

**Prerequisite:** LATIN 101-3 Elementary Latin or equivalent placement (see Language Placement (p. 268))

- 3 Latin courses at the 200 or 300 level
- 3 additional Latin and/or classics courses (excluding CLASSICS 110-0), 1 of which must be LATIN 310-0 (may include 1 classical traditions course with consent of the director of undergraduate studies)

## Minor requirements: Greek concentration (6 units)

**Prerequisite:** GREEK 115-2 Accelerated Elementary Ancient and Biblical Greek, or equivalent placement (see Language Placement (p. 268))

- 3 Greek courses at the 200 or 300 level
- 3 additional Greek and/or classics courses (excluding CLASSICS 110-0), 1 of which must be at the 300 level (may include 1 classical traditions course with consent of the director of undergraduate studies)

## Minor requirements: Classical studies (6 units)

Course	Title
2 courses from: <sup>1</sup>	
CLASSICS 210-0	The World of Homer
CLASSICS 211-0	Greek History and Culture: From Homer to Alexander the Great
CLASSICS 212-0	Rome: Culture and Empire
CLASSICS 260-0	Classical Mythology
4 additional classics, classical traditions, Greek, or Latin courses, at least 2 of which must be at the 300 level and none of which may be CLASSICS courses at the 100 level	

<sup>1</sup> Classics majors may substitute additional 200- or 300- level courses in classics, classical traditions, Greek, or Latin

## Cognitive Science

cogsci.northwestern.edu

Cognitive science is the interdisciplinary scientific study of the mind and brain. It draws on methods and perspectives from cognitive psychology, computer science, linguistics, philosophy, anthropology, neuroscience, and other related fields to understand how the mind acquires, represents, and uses knowledge. The major in cognitive science gives a broad foundation in this interdisciplinary field, encompassing coursework across the allied disciplines of cognitive science. Required introductory courses survey basic phenomena and approaches; basic methodology courses impart the methods of cognitive science; theme courses provide foundations of disciplines within cognitive science; and elective courses allow students to pursue more advanced study in particular disciplines. A proseminar focuses on ongoing research in the field by Northwestern faculty.

For additional information about the Program please visit the Cognitive Science (<https://cogsci.northwestern.edu/>) website. Or contact the Program Assistant.

## Programs of Study

- Cognitive Science Major (p. 272)
- Cognitive Science Minor (p. 274)

**COG\_SCI 110-0 Introduction to Cognitive Science (1 Unit)** Become familiar with and invested in cognitive science research, focusing on big themes in the study of the mind and mental representation, exemplified by interdisciplinary work conducted at Northwestern University. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**COG\_SCI 202-0 Evaluating Evidence (1 Unit)** Introduction to evaluation of qualitative and quantitative evidence across science, politics, society, health, education, and industry. POLI\_SCI 212-0 and COG\_SCI 202-0 are taught together; may not receive credit for both courses. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area Social Behavioral Sciences Distro Area*

**COG\_SCI 207-0 Introduction to Cognitive Modeling (1 Unit)** Introduction to artificial intelligence and cognitive science. Fundamental questions concerning thinking, language understanding, analogy, commonsense reasoning, education, emotions and consciousness. *Formal Studies Distro*

*Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**COG\_SCI 210-0 Language and the Brain (1 Unit)** The study of language and its biological basis from linguistic, psychological, and neuroscientific perspectives. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**COG\_SCI 211-0 Learning, Representation & Reasoning (1 Unit)** Interdisciplinary study of the nature of the mind with emphasis on learning, representation, and reasoning. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**COG\_SCI 220-0 Selected Topics in Cognitive Science (1 Unit)** Topics in cognitive science. Content varies. May be repeated for credit with change of topic.

**COG\_SCI 345-0 Presenting Ideas & Data (1 Unit)** Understanding principles of cognitive psychology, data visualization, and graphic design to present ideas and data in an engaging, clear, and memorable manner. PSYCH 345-0 and COG\_SCI 345-0 are taught together; may not receive credit for both courses. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**COG\_SCI 366-0 Cognitive Science Proseminar (1 Unit)** Seminar focused on current trends in cognitive science research and discussions with Northwestern cognitive science faculty. For cognitive science majors/minors or with consent of instructor.

**COG\_SCI 398-1 Senior Thesis Seminar (1 Unit)** Independent research for a senior thesis under the direction of department faculty. By invitation only.

**COG\_SCI 398-2 Senior Thesis Seminar (1 Unit)** Independent research for a senior thesis under the direction of department faculty. By invitation only.

**COG\_SCI 399-0 Independent Study (1 Unit)** Faculty-directed research. Consent of instructor required.

## Cognitive Science Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Major Requirements (14 units)</b>	
<i>4 required introductory courses:</i>	
COG_SCI 110-0	Introduction to Cognitive Science
COMP_SCI 110-0 or COMP_SCI 111-0	Introduction to Computer Programming Fundamentals of Computer Programming
STAT 202-0 or PSYCH 201-0	Introduction to Statistics and Data Science Statistical Methods in Psychology
COG_SCI 202-0	Evaluating Evidence
<i>1 required proseminar</i>	
COG_SCI 366-0	Cognitive Science Proseminar
<i>5 Theme courses, one from each of the five themes listed below.</i>	
<i>Theme: Brains &amp; Bodies</i>	
COG_SCI 210-0	Language and the Brain
LING 250-0	Sound Patterns in Human Language

MUS_THRY 251-0	Intro to Music Cognition	CSD 302-0	Anatomy and Physiology of the Peripheral Hearing Mechanism
NEUROSCI 326-0	Neurobiology of Learning and Memory	CSD 303-0	Brain and Cognition
PSYCH 221-0	Introduction to Neuroscience	CSD 306-0	Psychoacoustics
<i>Theme: Learning over Lifetimes</i>			
COG_SCI 211-0	Learning, Representation & Reasoning	CSD 309-0	Culture, Language and Learning
PSYCH 228-0	Cognitive Psychology	CSD 310-0	Biological Foundations of Speech and Music
PSYCH 244-0	Developmental Psychology	CSD 342-0	Language and Cognition in Atypical Development
<i>Theme: Models &amp; Machines</i>			
COG_SCI 207-0	Introduction to Cognitive Modeling	CSD 373-0	Introduction to Learning Disabilities
COMP_SCI 348-0	Introduction to Artificial Intelligence	CSD 376-0	Diagnostic & Remedial Approaches for Children With Learning Problems
LING 260-0	Formal Analysis of Words & Sentences	CSD 382-0	Autism Spectrum Disorder
LING 334-0	Introduction to Computational Linguistics	CSD 388-0	Attention Deficit Disorder and Related Disorders
PHIL 225-0	Minds and Machines	CSD 392-0	Language Development and Usage
PHIL 325-0	Philosophy of Mind	CSD 406-0	Medical Aspects of Audiology
<i>Theme: Reasoning &amp; Rhetoric</i>			
LING 270-0	Meaning	CSD 444-0	Development and Disorders of Mathematics
PHIL 255-0	Theory of Knowledge	CSD 457-0	Language Science
POLI_SCI 335-0	Political Psychology	COMP_SCI 325-0	Artificial Intelligence Programming
PSYCH 333-0	Psychology of Thinking	COMP_SCI 337-0	Natural Language Processing: Classical Approaches
PSYCH 373-0	Decision Making	COMP_SCI 338-0	Practicum in Intelligent Information Systems
<i>Theme: Collective Cognition</i>			
ANTHRO 377-0	Psychological Anthropology	COMP_SCI 344-0	Design of Computer Problem Solvers
COG_SCI 345-0	Presenting Ideas & Data	COMP_SCI 349-0	Machine Learning
LOC 214-0	Culture and Cognition	COMP_SCI 371-0	Knowledge Representation and Reasoning
LOC 308-0	Redesigning Everyday Organizations	COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
LOC 313-0	Learning and Thinking in Organizations	ECON 330-0	Behavioral Economics
PSYCH 344-0	Cultural Psychology	LING 300-0	Topics in Linguistics

4 Electives chosen from the Theme lists above or from the Electives listed below

- Of the 9 Theme and Elective courses (5 Theme courses plus 4 Electives) at least five must be at the 300-level or above. Other 300- and 400-level courses beyond those listed here may be counted as Electives with consent of the director of undergraduate studies.
- COG\_SCI 399-0 or another independent study approved by the cognitive science adviser may count as an Elective course.
- For students pursuing honors, the second quarter Senior Thesis Seminar (COG\_SCI 398-2) may count as an Elective course.
- At most 3 courses counted toward the cognitive science major may be double-counted toward another major. Courses used to meet major requirements may not be double-counted toward a minor.

## Electives

Students following the major requirements in this catalog year may choose any of the elective courses listed below regardless of academic area. Students following requirements in a prior catalog year should refer to that catalog for the required allocation of courses among designated advanced elective areas.

### Elective Courses

Course	Title
ANTHRO 360-0	Language and Culture
ANTHRO 361-0	Talk as Social Action
ANTHRO 389-0	Ethnographic Methods and Analysis
BIOL_SCI 302-0	Fundamentals of Neurobiology
CSD 301-0	Anatomy and Physiology of the Vocal Mechanism
CSD 302-0	Anatomy and Physiology of the Peripheral Hearing Mechanism
CSD 303-0	Brain and Cognition
CSD 306-0	Psychoacoustics
CSD 309-0	Culture, Language and Learning
CSD 310-0	Biological Foundations of Speech and Music
CSD 342-0	Language and Cognition in Atypical Development
CSD 373-0	Introduction to Learning Disabilities
CSD 376-0	Diagnostic & Remedial Approaches for Children With Learning Problems
CSD 382-0	Autism Spectrum Disorder
CSD 388-0	Attention Deficit Disorder and Related Disorders
CSD 392-0	Language Development and Usage
CSD 406-0	Medical Aspects of Audiology
CSD 444-0	Development and Disorders of Mathematics
CSD 457-0	Language Science
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
ECON 330-0	Behavioral Economics
LING 300-0	Topics in Linguistics
LING 315-0	Experimental Approaches to Word Form Processing
LING 316-0	Experimental Syntax
LING 317-0	Experimental Pragmatics
LING 321-0	Bilingualism
LING 330-0	Research Methods in Linguistics
LING 341-0	Language Typology
LING 342-0	Structure of Various Languages
LING 350-0	Fundamentals of Laboratory Phonology
LING 360-0	Fundamentals of Syntax
LING 370-0	Fundamentals of Meaning
LING 371-0	Reference
LING 372-0	Pragmatics
LING 373-0	Implicature
LING 450-1	Laboratory Phonology I
LING 460-2	Syntactic Analysis II
LRN_SCI 301-0	Design of Learning Environments
LRN_SCI 401-0	Knowledge Representation for the Learning Sciences
LRN_SCI 425-0	Introduction to Design for the Learning Sciences
LRN_SCI 426-0	Design of Technological Tools for Thinking and Learning
LRN_SCI 429-0	Design of Learning Environments
MUSIC_ED 437-0	Psychology of Music Teaching & Learning
NEUROSCI 320-0	Animal Behavior
NEUROSCI 360-0	Neuroscience of Brain Disorders
NEUROSCI 377-0	Neurobiology of Sensation and Perception
PHIL 250-0	Elementary Logic II
PHIL 327-0	Philosophy of Psychology
PHIL 330-0	Practical Reasoning and Choice
PHIL 350-0	Advanced Logic
PHIL 351-0	Advanced Topics in Philosophical Logic
PHIL 353-0	Philosophy of Language

PSYCH 324-0	Perception	COMP_SCI 111-0	Fundamentals of Computer Programming
PSYCH 327-0	Brain and Cognition	PSYCH 201-0	Statistical Methods in Psychology
PSYCH 328-0	Brain Damage and the Mind	STAT 202-0	Introduction to Statistics and Data Science
PSYCH 336-0	Consciousness	<b>3 Theme courses, each selected from a different one of the five themes listed below</b>	
PSYCH 370-0	Cognitive Development	<b>Theme: Brains &amp; Bodies</b>	
PSYCH 372-0	Language and Cognition	COG_SCI 210-0	Language and the Brain
PSYCH 374-0	Human Memory	LING 250-0	Sound Patterns in Human Language
PSYCH 461-0	Reasoning and Representation	MUS_THRY 251-0	Intro to Music Cognition
PSYCH 466-0	Analogy and Similarity	NEUROSCI 326-0	Neurobiology of Learning and Memory
<i>Also relevant sections of:</i>		PSYCH 221-0	Introduction to Neuroscience
ANTHRO 390-0	Topics In Anthropology	<b>Theme: Learning over Lifetimes</b>	
CSD 369-0	Special Topics in Communication Sciences and Disorders	COG_SCI 211-0	Learning, Representation & Reasoning
COMP_SCI 396-0	Special Topics in Computer Science	PSYCH 228-0	Cognitive Psychology
LRN_SCI 451-0	Topics in Learning Sciences	PSYCH 244-0	Developmental Psychology
MUS_THRY 335-0	Selected Topics in Music Theory	<b>Theme: Models &amp; Machines</b>	
MUS_THRY 336-0	Selected Topics in Music Cognition	COG_SCI 207-0	Introduction to Cognitive Modeling
MUS_THRY 435-0	Selected Topics in Music Theory	COMP_SCI 348-0	Introduction to Artificial Intelligence
MUS_THRY 436-0	Selected Topics in Music Cognition	LING 260-0	Formal Analysis of Words & Sentences
PHIL 410-0	Seminar: Special Topics in Philosophy	LING 334-0	Introduction to Computational Linguistics
PHIL 426-0	Seminar in Philosophy of Mind	PHIL 225-0	Minds and Machines
PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience	PHIL 325-0	Philosophy of Mind
PSYCH 460-0	Special Topics in Cognition	<b>Theme: Reasoning &amp; Rhetoric</b>	
PSYCH 470-0	Topics in Brain, Behavior, and Cognition	LING 270-0	Meaning
		PHIL 255-0	Theory of Knowledge
		POLI_SCI 335-0	Political Psychology
		PSYCH 333-0	Psychology of Thinking
		PSYCH 373-0	Decision Making
<b>Theme: Collective Cognition</b>			
		ANTHRO 377-0	Psychological Anthropology
		COG_SCI 345-0	Presenting Ideas & Data
		LOC 214-0	Culture and Cognition
		LOC 308-0	Redesigning Everyday Organizations
		LOC 313-0	Learning and Thinking in Organizations
		PSYCH 344-0	Cultural Psychology
<i>2 Elective courses</i> <sup>1</sup>			

<sup>1</sup> Elective courses can be chosen from the Theme lists above or from the Elective Courses list shown under the Cognitive Science major (p. 272).

## Honors in Cognitive Science

Majors with strong academic records and an interest in pursuing honors should contact the director of undergraduate studies in early spring of junior year. Qualifying students prepare a thesis proposal under the guidance of a faculty mentor and present the proposal, along with the names of the mentor and a second faculty reader, to the program committee for review. After committee approval of the proposal, students normally enroll in COG\_SCI 398-1 Senior Thesis Seminar in fall and COG\_SCI 398-2 Senior Thesis Seminar in winter of senior year. With the permission of the director of undergraduate studies, 1 quarter of COG\_SCI 399-0 Independent Study may be substituted for one of either COG\_SCI 398-1 Senior Thesis Seminar or COG\_SCI 398-2 Senior Thesis Seminar.

Students whose projects, theses, and grades meet program criteria are recommended to the college for graduation with honors. For more information consult the director of undergraduate studies and see the section on *Honors in Cognitive Science* on the Cognitive Science Undergraduate page.

## Cognitive Science Minor

The minor in cognitive science broadens the academic background of students majoring in related fields, providing them with the methods and foundations for understanding cognitive issues in an interdisciplinary framework.

Course	Title
<b>Minor Requirements (8 units)</b>	
<i>2 required introductory courses:</i>	
COG_SCI 110-0	Introduction to Cognitive Science
COG_SCI 202-0	Evaluating Evidence
<i>1 methodology course chosen from:</i>	
COMP_SCI 110-0	Introduction to Computer Programming

## Comparative Literary Studies

complit.northwestern.edu

The Comparative Literary Studies Program is an interdepartmental, interdisciplinary program for the study of literature across national and linguistic lines. Those who work in the field of comparative literature hold that language is not an indifferent medium of expression but an integral dimension of every expressive act. Drawing on faculty from the various literature departments as well as from disciplines such as art history, film studies, music, and philosophy, the CLS program examines literary texts within the context of diverse literary traditions and other cultural phenomena. CLS encourages students not only to read and interpret works of literature but also to reflect on the assumptions and methods that shape literary and other humanistic studies.

In contrast to studying one culture's literature over a specific time period, CLS juxtaposes literatures of different cultures and epochs, studying the themes, conventions, and movements shared by distinct

literary traditions as well as those features that distinguish them from each other. Building on comparative literature's traditional basis in Euro/American and western classical literatures, Northwestern's CLS Program offers students the opportunity to pursue programs of study in the literatures of South and East Asia, the Middle East, Africa, and Latin America, as well as courses offered through Native American and indigenous studies. By engaging in cross-disciplinary scholarship across languages and historical eras, students encounter the literary achievements of people with vastly different histories, frames of cultural reference, and poetic traditions.

Their course of study provides CLS students with a range of innovative theoretical approaches to literary texts, movements, and genres, along with a strong commitment to traditional literary interpretation, philological methods, and critical analysis. In considering theoretical texts ranging from the classics of ancient Greece and Roman to contemporary critical theory, students not only learn to understand specific literary works but also raise questions about their relations to other forms of discourse and about the nature of literature itself. To this end, the CLS program emphasizes the study of a diverse body of literary theories (in domains ranging from poststructuralist, psychoanalytic, feminist, and historicist approaches, to world literature, translation studies, critical race theory, and the environmental humanities) alongside the theoretical and methodological concerns of related disciplines (such as anthropology, history, philosophy, gender and sexuality studies, and sociology).

Finally, the CLS Program considers literary texts in relation to other forms of creative and cultural production. The relationship of literature to cultural practices and the arts, among them music, visual culture, fashion, and new media, is an important focus of interest in many courses, and students are encouraged to take classes in other disciplines.

## Study Abroad

The Program in Comparative Literary Studies encourages all majors who qualify to consider a year or a term of study abroad as juniors.

## Programs of Study

- Comparative Literary Studies Major (p. 276)
- World Literature Minor (p. 277)
- Comparative Literary Studies BA/MA (p. 277)

**COMP\_LIT 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**COMP\_LIT 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**COMP\_LIT 200-0 Introduction to Literary Theory (1 Unit)** Key topics and debates in literary theory and criticism; how theory actively assists in building literary and cultural comparison across history, language, nation, genre, and medium. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 201-0 Reading World Literature (1 Unit)** Introduction to a diverse range of important works of world literature and central debates and questions about the idea of "world literature." Content varies. May

be repeated for credit with different topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 202-0 Interpreting Culture (1 Unit)** Introduction to the theory and practice of interpreting "cultural texts"- the literary and other texts through which human culture imposes structures of meaning on the world. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 205-0 Reading Difference (1 Unit)** Introduction to representations of social difference in literature, criticism, film, and media. Selective emphasis on such topics as gender, sexuality, race, ethnicity, species, and ability. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 207-0 Introduction to Critical Theory (1 Unit)** Crisis, criticism, and critique in philosophical, political, and cultural contexts. Focus on the philosophical aspects of critical theory with reference to social conditions and art, literary, and/or political forms. COMP\_LIT 207-0 and PHIL 220-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**COMP\_LIT 211-0 Readings in Genre (1 Unit)** Analysis of major literary and aesthetic genres, such as epic, sacred texts, drama, lyric, visual media, and narrative. Study of particular examples, with focus on historical development, formal features, and social context. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 270-0 Literatures in Translation (1 Unit)** Focused study of literatures from around the world offered in English translation. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 300-0 Theories and Practices of Reading (1 Unit)** Theories and methods of literary and cultural interpretation. Discussion and readings will prepare students to undertake theoretically grounded projects comparing literature and other forms of cultural expression. Content varies. *Literature Fine Arts Distro Area*

**COMP\_LIT 301-0 Studies in World Literature (1 Unit)** Exploration of a specific body of literature, criticism, or film that cuts across conventional national or literary historical boundaries. Attention given to critical debates about "world literature." Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 302-0 Reading Across Disciplines (1 Unit)** Comparative cultural studies across varied media and methodologies. May address literature in relationship to environmental, legal, or public humanities; visual culture and curatorial practice; and music. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 303-0 Movements and Periods (1 Unit)** Focused study of intellectual formations belonging to a movement or period, such as Tang Dynasty, Age of Enlightenment, realism, the avant-garde, or post-WWII. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 305-0 Studies in Film, Media, and Visual Culture (1 Unit)** Focused studies in international cinema or visual and other media (e.g. Brazilian documentary, Middle East visual culture, or Bollywood film). Major theoretical issues in film and media studies. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 306-0 Studies in Race & Ethnicity (1 Unit)** Representations of comparative race and ethnicity in world literature, criticism, and film. Discussion and theoretical readings address racial and ethnic identity

formation, intersection, and difference. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 307-0 Studies in Gender, Sexuality & Representation (1 Unit)** Representations of gender and sexuality in literature, film, and criticism. Global and comparative topics situated in historical, social and political contexts. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 311-0 Theory and Practice of Translation (1 Unit)**

Introduction to theoretical and practical approaches to literary translation.

**COMP\_LIT 312-0 Major Authors and Texts (1 Unit)** Study of a major author, text, or body of work in terms of its cultural context and critical reception. Content varies. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**COMP\_LIT 320-SA Critical Theory and Literary Studies (1 Unit)** Crisis and critique as they figure in literary and cultural production. This course will examine philosophical texts on critical theory and use them to read literature and the media. This is a Study Abroad course offered through the Paris Program in Critical Theory, Literature, and Media.

**COMP\_LIT 383-0 Special Topics in Theory: Critical Theory (1 Unit)** For students with previous study of criticism and literary theory. Content varies. May be repeated for credit with different topic.

**COMP\_LIT 383-SA Special Topics in Theory: Critical Theory (1 Unit)** For students with previous study of criticism and literary theory. Content varies. May be repeated for credit with different topic.

**COMP\_LIT 390-0 Special Topics in Comparative Literature (1 Unit)**

Content varies-for example, problems of literary translation, literature and psychoanalysis. May be repeated for credit with different topic.

**COMP\_LIT 390-SA Special Topics in Comparative Literature (1 Unit)**

Content varies-for example, problems of literary translation, literature and psychoanalysis. May be repeated for credit with different topic.

**COMP\_LIT 398-0 Senior Seminar (1 Unit)** Tools and techniques for writing sustained scholarly essays. Required of senior majors in comparative literary studies. Prerequisite: consent of program adviser.

**COMP\_LIT 399-0 Independent Study (1 Unit)**

## Comparative Literary Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Students pursuing a program of study in comparative literature need to be acquainted with at least two literary traditions. They choose a first literature, normally that written in their native tongue, and a second literature written in another language. They take at least 2 courses in each. They also take at least 2 courses in non-Euro/American literature, either in translation or in the original language.

The core 200-level CLS courses provide students with a range of theoretical approaches to literary texts in particular and the study of culture in general. Advanced or 300-level CLS courses build on these core

courses, allowing students to use their linguistic skills to further explore literary themes, movements, genres, and periods on a comparative basis.

During their junior year, majors in CLS should meet with the director of undergraduate studies (DUS) to ensure they are on track to complete requirements for the major, including literature courses taken in different *genres, periods and regions*, as specified by the major description. By spring of their junior year, students must choose a faculty advisor and begin to outline a senior research project.

All majors are required to take COMP\_LIT 398-0 Senior Seminar in fall quarter of senior year, during which they write a substantial senior paper (which may be based on a previous paper written for another course). Students meeting the necessary requirements may opt to pursue honors in the major, by enrolling in COMP\_LIT 399-0 Independent Study in the winter quarter of their senior year, and expanding their senior essay into an Honors Thesis.

## Major Requirements (12 units)

### 2 courses required for all majors:

- COMP\_LIT 200-0 Introduction to Literary Theory
- COMP\_LIT 398-0 Senior Seminar (taken during Fall quarter of senior year)

### 10 literature courses, which must encompass the following categories (a single course may fill multiple requirements):

- **200-level COMP\_LIT courses:** 2 core courses in comparative literary studies, chosen from:

Course	Title
COMP_LIT 201-0	Reading World Literature
COMP_LIT 202-0	Interpreting Culture
COMP_LIT 205-0	Reading Difference
COMP_LIT 207-0	Introduction to Critical Theory
COMP_LIT 211-0	Readings in Genre

- **300-level COMP\_LIT courses:** 3 advanced courses in comparative literary studies (chosen from any COMP\_LIT 300-level course, except 398 or 399)

- **Language:** 4 courses

- a. 2 courses in first language, at least one 300-level
- b. 2 courses in second language, at least one 300-level  
(modification by consent of director of undergraduate studies)

- **Genre:** One course each devoted to three of the following four genre categories:

- a. Poetry
- b. Drama & Performance
- c. Narrative
- d. Film & Visual Studies

- **Period:** Two courses in each of two broad periods:

- a. Pre-1830
- b. 1830-present

- **Region:** Two non-Euro/American courses (can be in translation)

If the above category requirements are not fulfilled by the minimum of 10 literature courses, additional courses may be required. At most 2 courses counted toward the Comparative Literary Studies major may be double-counted toward another major.

## Honors in Comparative Literary Studies

Majors with strong academic records may be recommended to pursue honors based on the strength of their senior essays. Recommended students expand their senior essay into a senior thesis (at least 30 pages long) during 1 quarter of independent study (COMP\_LIT 399-0 Independent Study), preferably in winter quarter. The COMP\_LIT 399-0 Independent Study enrollment does not count toward the 12 courses required for the major. Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information consult the program website and Honors in the Major (p. 222).

## World Literature Minor

The minor in world literature, like the major in comparative literary studies, examines literary, aesthetic and cultural production beyond the boundaries of one national or linguistic tradition. It is designed for students who are interested in the global and comparative dimensions of literary study, but unable for whatever reason to complete the comparative literary studies major requirements, for example, because they may not have the language skills necessary for the major. Unlike the major, the minor in world literature does not have a language requirement. Students are encouraged to read literary texts in the original language but can also take courses where literature is read in English translation.

The minor allows students to study literatures from different parts of the world as well as different periods. Students take courses from at least two different cultural traditions and are encouraged to examine the relations between them—particularly between Euro/American traditions and those of the Middle East, Asia, Africa, and South America. In so doing students discover how literary texts circulate transnationally and thus become part of “world literature.” This crossing often involves some kind of translation, so the minor, while allowing students to read literary texts in English translation, also makes translation a primary object of investigation.

## Minor Requirements (7 units)

- At least 2 COMP\_LIT courses, of which 1 is COMP\_LIT 201-0 Reading World Literature and the other is a 300-level course.
- 5 additional literature courses from at least two different cultural and linguistic traditions.
  - Courses may be from CLS, English, or any of the foreign language departments or area-studies programs.
- At least 2 courses must be at the 300-level.

## Comparative Literary Studies BA/MA

Students with a strong record in their major courses and an interest in graduate study are eligible to apply for the BA/MA program in comparative literary studies once they are within 4 courses of completing their undergraduate degrees. The application requires a statement of purpose, a plan of study, and two letters of recommendation from department faculty.

Information about degree requirements can be found in the Graduate Catalog section describing the combined BA/MA program in Comparative

Literary Studies (<https://catalogs.northwestern.edu/tgs/comparative-literary-studies/comparative-literary-studies-bach-mast/>).

## Computer Science

The Program in Computer Science offers students the opportunity to study computer science within the context of Weinberg College's focus on liberal arts and sciences, as distinct from the engineering context in the McCormick School's Department of Computer Science. The computer science requirements are identical in the two programs. Faculty and courses for the program are drawn from the McCormick CS department, which has extensive computing facilities for student use.

Computer science is a highly interdisciplinary field. The department maintains links with other programs at Northwestern, including cognitive science, psychology, learning sciences, communication studies, radio/television/film, computer engineering, and the Transportation Center.

The computer science requirements include the following five parts. Undergraduates are encouraged to participate in research projects and to take advanced courses.

- Background or related courses: fulfill the general requirements of the University and school and provide the necessary background for study in computer science
- Core courses: basic introduction to computer science
- Breadth requirements: areas of computer science to which every CS graduate should be exposed
- Technical electives: opportunities to explore selected computer science topics in detail
- Project: exposure to significant development and/or research work

For more information on the CS department and its course offerings, see the McCormick School chapter of this catalog (p. 167), or the CS web site (<https://www.mccormick.northwestern.edu/computer-science/>). Students are urged to speak regularly with advisers and to consult the CS website for a detailed curriculum document.

## Programs of Study

- Computer Science Major (p. 277)
- Computer Science Minor (Weinberg College) (p. 280)
- Computer Science Second Major for ISP Students (p. 280)
- Computer Science BA/MS (p. 281)

These courses are offered by the Robert R. McCormick School of Engineering and Applied Sciences. See Computer Science (p. 167).

## Computer Science Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Program Courses (19 units)</b>	
6 core courses:	

COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
COMP_SCI 213-0	Introduction to Computer Systems
COMP_SCI 214-0	Data Structures & Algorithms

5 breadth courses (see below)

2 project courses (see below)

6 technical electives (see below)

**Related Courses (Units depend on mathematics sequence taken.)**

Mathematics (p. 279)

Probability and Statistics (p. 279)

Physics or biological sciences courses are recommended to satisfy the Weinberg College natural sciences distribution requirement.

## Breadth Courses

Majors must take one course from each area. Minors must take one course from each of any three areas.

### Theory

Course	Title
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms

### Systems

Course	Title
COMP_SCI 322-0	Compiler Construction
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
COMP_SCI 440-0	Advanced Networking
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 443-0	Advanced Operating Systems
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I

### Artificial Intelligence

Course	Title
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

## Interfaces

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 370-0	Computer Game Design
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 376-0	Computer Game Design and Development
COMP_SCI 377-0	Game Design Studio
ELEC_ENG 332-0	Introduction to Computer Vision

## Software Development and Programming Languages

Course	Title
COMP_SCI 310-0	Scalable Software Architectures
COMP_SCI 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development

## Project Courses

Majors must take two courses from this list.

### Project course list

Course	Title
COMP_SCI 311-0	Inclusive Making
COMP_SCI 312-0	Data Privacy
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 322-0	Compiler Construction
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 351-2	Intermediate Computer Graphics
COMP_SCI 354-0	Computer System Security
COMP_SCI 355-0	Digital Forensics and Incident Response
COMP_SCI 367-0	Wireless and Mobile Health: Passive Sensing Data Analytics
COMP_SCI 370-0	Computer Game Design
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development
COMP_SCI 397-0	Special Projects in Computer Science
COMP_SCI 412-0	Data Privacy
COMP_SCI 415-0	Design, Technology, and Research
COMP_SCI 433-0	Wireless Protocols for the Internet of Things
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 445-0	Internet-scale Experimentation
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_SCI 461-0	Deep Learning for Natural Language Processing
COMP_SCI 497-0	Special Projects in Computer Science
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 366-0	Embedded Systems
COMP_ENG 466-0	Embedded Systems
ELEC_ENG 332-0	Introduction to Computer Vision

## Technical electives

Majors must take six technical electives. **Any 300- or 400-level COMP\_SCI course** may be taken as a technical elective. In addition the following courses may also be taken as technical electives:

Course	Title
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 329-0	The Art of Multicore Concurrent Programming
COMP_ENG 334-0	Fundamentals of Blockchains and Decentralization
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 355-0	ASIC and FPGA Design
COMP_ENG 356-0	Introduction to Formal Specification & Verification
COMP_ENG 357-0	Design Automation in VLSI
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I
COMP_ENG 362-0	Computer Architecture Projects
COMP_ENG 364-0	CyberPhysical Systems Design and Application
COMP_ENG 365-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 366-0	Embedded Systems
COMP_ENG 368-0	Programming Massively Parallel Processors with CUDA
COMP_ENG 452-0	Adv Computer Architecture
COMP_ENG 453-0	Parallel Architectures
COMP_ENG 456-0	Modern Topics in Computer Architecture
COMP_ENG 459-0	VLSI Algorithms
COMP_ENG 464-0	Cyber-Physical Systems Design and Application
COMP_ENG 465-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 466-0	Embedded Systems
COMP_ENG 468-0	Programming Massively Parallel Processors with CUDA
ELEC_ENG 326-0	Electronic System Design I
ELEC_ENG 332-0	Introduction to Computer Vision
ELEC_ENG 375-0	Machine Learning: Foundations, Applications, and Algorithms
ELEC_ENG 433-0	Statistical Pattern Recognition
ELEC_ENG 435-0	Deep Learning: Foundations, Applications, and Algorithms

## Related Courses

### Mathematics

Course	Title
MATH 220-1	Single-Variable Differential Calculus
& MATH 220-2	and Single-Variable Integral Calculus
or MATH 218-1	Single-Variable Calculus with Precalculus
& MATH 218-2	and Single-Variable Calculus with Precalculus
& MATH 218-3	and Single-Variable Calculus with Precalculus
MATH 230-1	Multivariable Differential Calculus
or MATH 228-1	Multivariable Differential Calculus for Engineering
MATH 240-0	Linear Algebra

### Probability and Statistics<sup>1</sup>

Course	Title
COMP_SCI 262-0	Mathematical Foundations of Computer Science - Part 2
or IEMS 201-0	Introduction to Statistics
or MATH 310-1	Probability and Stochastic Processes
or STAT 210-0	Introduction to Probability and Statistics

<sup>1</sup> STAT 202-0 Introduction to Statistics and Data Science is not accepted.

### Note

Many courses are eligible to count toward more than one requirement for the major; for example, all breadth courses are also technical elective courses. A student who completes such a course must choose which requirement area to apply that course. A single course does not satisfy more than one requirement at a time.

### Concentrations

Computer Science students may elect to declare one optional concentration, to highlight that they are specializing in one of the following sub-fields of computer science:

- Artificial Intelligence
- Systems
- Foundations
- Security and Privacy
- Software Engineering and Programming Languages
- Robotics
- Computer Hardware and Architecture
- Human-Computer Interaction

To fulfill a concentration, a student needs to have completed four classes from that concentration's list of courses within their Computer Science Major Courses (CS Breadth, Project and Technical Electives).

The list of courses for each concentration, as well as the full details and requirements for concentrations can be found on the Computer Science department web site (<https://www.mccormick.northwestern.edu/computer-science/academics/undergraduate/bachelors/>).

### Honors in Computer Science

Outstanding students majoring in computer science may be considered for program honors. For information on criteria and procedures, contact the program director and see Honors in the Major (p. 222).

# Computer Science Minor (Weinberg College)

The program offers a minor in computer science for students who wish to develop a strong competence in computer science while majoring in another area.

Course	Title
<b>Prerequisites</b>	
MATH 220-1 & MATH 220-2	Single-Variable Differential Calculus and Single-Variable Integral Calculus
or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 230-1	Multivariable Differential Calculus
or MATH 228-1	Multivariable Differential Calculus for Engineering
MATH 240-0	Linear Algebra
<b>Minor Requirements (9 units)</b>	
<i>6 core courses</i>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
COMP_SCI 213-0	Introduction to Computer Systems
COMP_SCI 214-0	Data Structures & Algorithms
<i>3 breadth courses in 3 separate breadth areas (see below)</i>	

## Breadth Courses

Majors must take one course from each area. Minors must take one course from each of any three areas.

### Theory

Course	Title
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms

### Systems

Course	Title
COMP_SCI 322-0	Compiler Construction
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
COMP_SCI 440-0	Advanced Networking
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 443-0	Advanced Operating Systems
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I

## Artificial Intelligence

Course	Title
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

## Interfaces

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 370-0	Computer Game Design
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 376-0	Computer Game Design and Development
COMP_SCI 377-0	Game Design Studio
ELEC_ENG 332-0	Introduction to Computer Vision

## Software Development and Programming Languages

Course	Title
COMP_SCI 310-0	Scalable Software Architectures
COMP_SCI 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development

Students should begin the minor before the end of the first quarter of their junior year.

## Computer Science Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

The Integrated Science Program is a highly selective program in Weinberg College. Weinberg College students, but not McCormick students, majoring in Integrated Science may complete an abbreviated, adjunct major in computer science through a curriculum tailored specifically to their needs:

Course	Title
<b>Core courses</b>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
COMP_SCI 213-0	Introduction to Computer Systems
COMP_SCI 214-0	Data Structures & Algorithms
<b>Breadth courses (same as for stand-alone major: 5 courses, one from each area, see below)</b>	
<b>Project courses (2 units; projects must be approved by both ISP and CS advisers)</b>	
COMP_SCI 399-0 or INTG_SCI 398-0	Projects Undergraduate Research

## Breadth Courses

Majors must take one course from each area. Minors must take one course from each of any three areas.

### Theory

Course	Title
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms

### Systems

Course	Title
COMP_SCI 322-0	Compiler Construction
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
COMP_SCI 440-0	Advanced Networking
COMP_SCI 441-0	Resource Virtualization
COMP_SCI 443-0	Advanced Operating Systems
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I

### Artificial Intelligence

Course	Title
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

### Interfaces

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 370-0	Computer Game Design
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 376-0	Computer Game Design and Development
COMP_SCI 377-0	Game Design Studio
ELEC_ENG 332-0	Introduction to Computer Vision

### Software Development and Programming Languages

Course	Title
COMP_SCI 310-0	Scalable Software Architectures
COMP_SCI 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development

## Computer Science BA/MS

Information about degree requirements can be found in the Graduate Catalog section describing the combined Bachelor's/MS in Computer Science (<https://catalogs.northwestern.edu/tgs/computer-science/computer-science-bach-mast/>).

### Critical Theory

[criticaltheory.northwestern.edu](http://criticaltheory.northwestern.edu)

Critical theory involves the attempt to better understand power and conflict and to achieve change in or distance from the unexamined beliefs, forces, conventions, ways of thought, institutions, and routines that determine much of human life. Students will develop their ability to question the world in which they live and to formulate theoretically nuanced responses to the problems that define our historical moment.

The minor is an interdisciplinary program of study enabling undergraduates to acquire understanding of critical theory's many dimensions and fields of application. It fosters dialogue between students with shared interests in such areas as continental philosophy, comparative literature, media and communication, film studies, the social sciences, and political theory, among others. Through the undergraduate-initiated and organized Critical Theory Reading Group (<https://criticaltheory.northwestern.edu/undergraduate/research-workshop.html>), students pursuing the minor benefit from an active undergraduate research culture. The minor is associated with Northwestern's Critical Theory Cluster (<https://www.criticaltheory.northwestern.edu/graduate/cluster.html>), a research network of over 100 faculty and graduates responsible for a vibrant program of interdisciplinary events, workshops, visiting professors, and lectures. The minor is also associated with the undergraduate Paris program in Art, Literature, and

Contemporary European Thought (<https://gloapp.northwestern.edu/?FuseAction=Programs.ViewProgramAngular&id=10037>).

## Program of Study

- Critical Theory Minor (p. 282)

## Critical Theory Minor

Course	Title
<b>Minor Requirements (6 units)</b>	
COMP_LIT 207-0/PHIL 220-0	Introduction to Critical Theory
5 interdisciplinary 300-level courses approved by the program, including at least 1 course in each of three generally defined fields:	
literary theory	
political theory	
philosophy	

A list of approved courses may be obtained from the program director or on the program website prior to registration. Students may petition the director of undergraduate studies to count courses not listed or to substitute 1 200-level course for a 300-level course.

## Data Science

See Statistics and Data Science (p. 438).

## Earth and Planetary Sciences

[earth.northwestern.edu](http://earth.northwestern.edu)

The field of Earth and Planetary Sciences involves studies of the past, present, and future of the Earth and other planets. Our curriculum covers a broad range of sub-disciplines spanning traditional Earth Science, as well as Ocean Science, Atmospheric Science, Climate Science, and Planetary Science. These fields address fundamental scientific questions important for understanding the Earth and society's connection to it.

Courses focus on physical, chemical, and biological processes affecting the Earth System spanning vast spatial and temporal scales, from the atomic to the interplanetary and from the origin of the solar system to the present and future. Course learning goals span theoretical methods, descriptive studies, data science, computer modeling, analytical laboratory skills, and field training.

Note that the title of the department is transitioning to Department of Earth, Environmental and Planetary Sciences (DEEPS) as the Program in Environmental Sciences becomes merged with the department.

## Programs of Study

- Earth and Planetary Sciences Major (p. 284)
- Earth and Planetary Sciences Minor (p. 286)
- Earth and Planetary Sciences Second Major for ISP Students (p. 286)

**EARTH 101-0 Earth Science for the 21st Century (1 Unit)** Introduction to earth science through topical issues facing contemporary society. Evolution of the earth, geologic hazards, natural resources, peak oil, climate change, the water cycle, nuclear fuel cycle, geology of US national parks. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**EARTH 102-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills

necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**EARTH 102-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

### EARTH 105-0 Climate Catastrophes in Earth History (1 Unit)

Introduction to fundamental components of the earth system that control climate. Exploration of present-day climate change and how climate has changed (sometimes catastrophically) in the geologic past. *Natural Sciences Distro Area*

**EARTH 106-0 The Ocean, the Atmosphere & Our Climate (1 Unit)** The role of the world's oceans in the earth's climate system. Properties of the oceans and marine life. Interaction of oceans, atmosphere, and land. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**EARTH 114-0 Evolution and the Scientific Method (1 Unit)** Review of evolutionary theory and its scientific, philosophical, social, and religious impacts. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

### EARTH 180-0 Fantasy Worlds – How to Build Your Own Planet (1 Unit)

The formation and evolution of rocky planets. Introduction of physical concepts common in the lives of planets as they are in our everyday lives: gravity, heat transport, magnetism, and others. Students will apply these concepts to build their own unique planet, and will present their creation at a culminating poster presentation. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**EARTH 201-0 Earth Systems Revealed (1 Unit)** Rocks, minerals, earth surface and interior processes, basic field methods. Required weekend field trip. Recommended Background: At least one credit in math, chemistry, biology or physics. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**EARTH 202-0 Earth's Interior (1 Unit)** The earth as a planet: origin, composition, and evolution of the solar system and the earth; internal structure of the earth; plate tectonics. Recommended Background: At least one credit in math, chemistry, biology or physics. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**EARTH 203-0 Earth System History (1 Unit)** Evolution of the earth system and its record through geological time. Interactions among the atmosphere, hydrosphere, sediments, and life on earth. Recommended Background: At least one credit in math, chemistry, biology or physics. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**EARTH 204-0 Communication for Geoscientists (1 Unit)** Science writing and presentation skills necessary for careers in the earth sciences. Topics include science writing as a language, scientific manuscript components, abstracts, poster presentations, formal talks, and informal presentations. Registration is reserved for Earth & Planetary Sciences majors and minors.

### EARTH 300-0 Earth and Planetary Materials (1 Unit)

Mineralogy of the earth and planets from atomic to continental scales, focusing on structure, composition, identification, and physical properties of minerals as they pertain to geological and societal applications. Recommended Background: At least one course in each of chemistry, physics, and math. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

### EARTH 301-0 Petrology: Evolution of Crustal and Mantle Rocks (1 Unit)

Origin, composition, and classification of igneous, metamorphic, and sedimentary rocks. Application of laboratory characterization and basic

thermodynamics to interpreting observed rock textures and mineral assemblages in terms of geological processes.

*Natural Sciences Distro Area*

#### **EARTH 310-0 Aqueous Geochemistry (1 Unit)**

The geochemistry of rivers, groundwater, lakes, and seawater. Topics include thermodynamics, kinetics, acids and bases, pH and alkalinity, carbonate equilibria, chemical weathering, and numerical modeling.

Recommended Background: At least one year of chemistry coursework.

*Natural Sciences Distro Area*

#### **EARTH 312-0 Stable Isotope Geochemistry (1 Unit)**

Fractionation and distribution of stable isotopes (C, H, N, O, S) in the biosphere, hydrosphere, atmosphere, and geosphere. Isotopic biogeochemistry, environmental problems, and global climate change.

Recommended Background: EARTH 201-0 and EARTH 203-0, or equivalent.

#### **EARTH 313-0 Radiogenic Isotope Geochemistry (1 Unit)**

Application of radiogenic isotopes to problems in geochemistry, petrology, hydrology, oceanography, ecology, and environmental science. Includes radioactive decay, nucleosynthesis, cosmochemistry, geochronology, mixing processes, and numerical modeling.

Recommended Background: CHEM 132-0, or equivalent.

#### **EARTH 314-0 Organic Geochemistry (1 Unit)**

The sources and fates of organic matter in the natural environment; global cycling of organic carbon; applications to the study of modern and ancient environments. Recommended Background: at least one quarter of earth or environmental science, and one quarter of chemistry. Taught with CIV\_ENV 314-0; may not receive credit for both courses.

*Natural Sciences Distro Area*

#### **EARTH 323-0 Seismology and Earth Structure (1 Unit)**

Elastic theory, seismic waves, seismometers and seismograms, ray paths, travel times; internal structure of the earth; field seismology. Recommended Background: EARTH 202-0, calculus, ordinary differential equations, and some exposure to complex numbers. No prior earth science experience required.

*Natural Sciences Distro Area*

#### **EARTH 324-0 Earthquakes and Tectonics (1 Unit)**

Earthquakes: location, characteristics, origin, mechanism, and relation to plate motions; seismic hazard. Recommended Background: Calculus, ordinary differential equations, and some exposure to complex numbers. No prior earth science experience required.

*Natural Sciences Distro Area*

#### **EARTH 327-0 Geophysical Time Series Analysis (1 Unit)**

Analysis of seismic and other geophysical data. Sampling, windowing, discrete and fast Fourier transforms, z-transforms, deconvolution, and filtering. Recommended Background: EARTH 202-0 and calculus differential equations; or consent of instructor.

#### **EARTH 330-0 Sedimentary Geology (1 Unit)**

Sedimentary rocks; stratigraphy; local, regional, and global correlation. Ancient depositional systems; facies analysis in context of tectonic, eustatic, and climatic controls on deposition. Recommended Background: EARTH 201-0 or consent of instructor.

#### **EARTH 331-0 Field Problems in Sedimentary Geology (1 Unit)**

Field methods in stratigraphy and sedimentology; interpretation of depositional systems, facies models, and sequence stratigraphy based on field observations. Includes 3½-week late-summer field trip to Colorado and Utah.

Prerequisite: EARTH 330-0.

#### **EARTH 340-0 Physics of Weather & Climate (1 Unit)**

An investigation of atmospheric processes and the physical laws that govern them. Topics covered include atmospheric composition and structure, radiative transfer, thermodynamics, convection, precipitation, and the general circulation of the three-dimensional atmosphere. When possible, course content will engage with contemporaneous atmospheric conditions, and provide students with a better understanding of their meteorological and climatic environments. Recommended Background: Completion of full year of calculus Math and Physics.

*Natural Sciences Distro Area*

#### **EARTH 341-0 Quaternary Climate Change: Ice Ages to the Age of Oil (1 Unit)**

Methods for reconstructing and dating past environmental changes, causes of natural climate change, and major climate events of the Quaternary through the present. Their relevance for understanding current climate change.

Prerequisite: At least one 200-level EARTH course; or consent of instructor.

*Natural Sciences Distro Area*

#### **EARTH 342-0 Contemporary Energy and Climate Change (1 Unit)**

Interdisciplinary course examining global energy use and associated challenges, including the history of energy use, the science of climate change, and technological, economic, and environmental aspects of various energy sources. Registration reserved for seniors majoring in math, science, or engineering, and graduate students in all disciplines. Taught with ISEN 410-0; may not receive credit for both courses.

*Natural Sciences Distro Area*

#### **EARTH 343-0 Earth System Modeling (1 Unit)**

Introduction to the art and science of reducing Earth's complex systems into simple numerical models to build a better understanding of how components interact and evolve. Recommended Background: At least one 200-level course in Earth or Environmental Science, one course in each of calculus and physics.

*Natural Sciences Distro Area*

#### **EARTH 350-0 Physics of the Earth for ISP (1 Unit)**

Solid-earth geophysics: the earth's gravity field, the earth's magnetic field, interior of the earth, heat flow, elementary wave propagation, plate tectonics.

Prerequisites: second-year standing in ISP; or comparable background in mathematics and physics and consent of both instructor and ISP director.

#### **EARTH 353-0 Mathematical Inverse Methods in Earth and Environmental Sciences (1 Unit)**

Theory and application of inverse methods to gravity, magnetotelluric, seismic, and other data. Nonlinear, linearized, underdetermined, and mixed-determined problems and solution methods, including regularized least-squares and neighborhood algorithms. Recommended Background: Linear algebra and differential calculus of multivariable functions.

#### **EARTH 360-0 Instrumentation and Field Methods (1 Unit)**

Theory and practicum on electronic instrumentation for monitoring and measurement in earth sciences, including data loggers, conceptual design and construction of electronic sensors, signal processing, data management, and network design. Recommended Background: 3 EARTH courses.

#### **EARTH 361-0 Scientific Programming in Python (1 Unit)**

Introduction to coding, scientific computing, and visualization for analyzing data in the physical sciences. Emphasis on Python, but Unix, shell scripting, and Generic Mapping Tools are also introduced. Students undertake a significant final coding project individually or in pairs.

*Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

#### **EARTH 370-0 Geobiology (1 Unit)**

A technical overview of the major topics of geo(micro)biology highlighting the fossil record, biogeochemical cycling, biominerization, key tools of the field, historical geobiology, and astrobiology. Recommended Background: EARTH 201-0 (concurrent enrollment acceptable) and first-year chemistry.

*Natural Sciences Distro Area*

#### **EARTH 371-0 Biogeochemistry (1 Unit)**

The cycling of biogenic elements (C, N, S, Fe, Mn) in surficial environments. Emphasis on microbial processes and isotopic signatures. Recommended Background: At least one course in biology, chemistry, and earth or environmental science. Taught with CIV\_ENV 317-0; may not receive credit for both courses.

*Natural Sciences Distro Area*

#### **EARTH 373-0 Microbial Ecology (1 Unit)**

This course will provide a framework for understanding the role of microbes in natural environments in terms of cell numbers, metabolisms, and interactions with geochemical cycles. We will delve deeply into the interactions between microbial populations, higher organisms, and even our own bodies. The course will finish on a survey of microbial composition and dynamics in key settings across the planet. Recommended Background: Basic understanding of chemistry, biology, and earth science.

#### **EARTH 390-0 Special Topics in Earth and Planetary Science (1 Unit)**

Topics of current interest to students and faculty. Prerequisites vary. May be repeated for credit with different topic.

**EARTH 399-0 Independent Study (1 Unit)** Special problems under direct faculty supervision. Comprehensive report required. Consent of instructor required.

## **Earth and Planetary Sciences Major**

Students in the undergraduate major build knowledge and skills relevant to further studies of, and/or careers in, geology and geophysics as well as environmental science, with specific emphasis on areas of relevance to humans such as **climate change, sustainability, and renewable energy**. It is ideal for the undergraduate who is interested in highly interdisciplinary science addressing many of the most profound issues facing the world in the 21st century.

Earth majors are involved in the full spectrum of departmental activities beyond coursework, including research, seminars, field trips, and social functions. Many do research projects with faculty and graduate students that lead to honors theses and scientific publications. For more information see About Earth and Planetary Sciences (p. 282) in this catalog and also the website for the department, which will be undergoing a name change to Department of Earth, Environmental, and Planetary Sciences (DEEPS).

Students are encouraged to take the 200-level foundation courses as early as possible, but they need not be taken in sequence.

Students planning to attend graduate school are strongly encouraged to conduct independent study (EARTH 399-0).

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## **Major Requirements: Department Courses (12 Units)**

### **4 200-level Core EARTH Courses (4 units)**

Course	Title
EARTH 201-0	Earth Systems Revealed
EARTH 202-0	Earth's Interior
EARTH 203-0	Earth System History
EARTH 204-0	Communication for Geoscientists

### **8 300-level Advanced Studies EARTH Courses (8 units)**

Advanced studies courses are divided into seven sub-disciplines and three skill areas, as listed below. Students must take at least one course from four of the seven Sub-Discipline Requirement lists below, and at least one course from each of the three Skills Requirement lists below. Additional advanced studies courses to the required total of eight may be any EARTH 300- or 400-level course, but only one EARTH 399-0 Independent Study may be counted toward the major. Consult with the Director of Undergraduate Studies (DUS) regarding EARTH 390-0 Special Topics in Earth and Planetary Science courses that may meet Sub-Discipline or Skills requirements. In certain cases, the DUS may approve additional eligible courses for the Sub-Discipline and Skills Requirement course lists.

#### **Sub-Discipline Requirement (4 courses)**

Students must take at least one course from four of the following seven sub-disciplines.

#### **Earth Materials**

Course	Title
EARTH 300-0	Earth and Planetary Materials
EARTH 301-0	Petrology: Evolution of Crustal and Mantle Rocks

#### **Geochemistry**

Course	Title
EARTH 310-0	Aqueous Geochemistry
EARTH 312-0	Stable Isotope Geochemistry
EARTH 313-0	Radiogenic Isotope Geochemistry
EARTH 314-0	Organic Geochemistry

#### **Seismology**

Course	Title
EARTH 323-0	Seismology and Earth Structure
EARTH 324-0	Earthquakes and Tectonics
EARTH 327-0	Geophysical Time Series Analysis

#### **Sedimentation and Stratigraphy**

Course	Title
EARTH 330-0	Sedimentary Geology
EARTH 331-0	Field Problems in Sedimentary Geology

#### **Climate/Paleoclimate**

Course	Title
EARTH 340-0	Physics of Weather & Climate
EARTH 341-0	Quaternary Climate Change: Ice Ages to the Age of Oil

EARTH 342-0	Contemporary Energy and Climate Change
EARTH 343-0	Earth System Modeling

**Geophysics**

Course	Title
EARTH 350-0	Physics of the Earth for ISP
EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences

**Geobiology**

Course	Title
EARTH 370-0	Geobiology
EARTH 371-0	Biogeochemistry
EARTH 373-0	Microbial Ecology

**Skills Requirement (3 courses)**

Students must take at least one course from each of the following three skill areas. No course may be counted in more than one skills category. Some topic offerings of EARTH 390-0 may be applied to a skill area with department approval; see department website for updates.

**Quantitative**

Course	Title
EARTH 310-0	Aqueous Geochemistry
EARTH 327-0	Geophysical Time Series Analysis
EARTH 343-0	Earth System Modeling
EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences
EARTH 361-0	Scientific Programming in Python

**Spatial Reasoning**

Course	Title
EARTH 300-0	Earth and Planetary Materials
EARTH 330-0	Sedimentary Geology
EARTH 361-0	Scientific Programming in Python

**Analytical/Instrumentation/Field**

Course	Title
EARTH 331-0	Field Problems in Sedimentary Geology
EARTH 343-0	Earth System Modeling
EARTH 360-0	Instrumentation and Field Methods
EARTH 361-0	Scientific Programming in Python
EARTH 373-0	Microbial Ecology

**Major Requirements: Related Courses (9.34-12.04 Units)****Math Courses (3-4 courses)**

Students must take the following math requirements, for a total of three units if the MATH 220 sequence is selected, or a total of four units if the MATH 218 sequence is selected.

Course	Title
MATH 220-1	Single-Variable Differential Calculus
& MATH 220-2	and Single-Variable Integral Calculus
or MATH 218-1	Single-Variable Calculus with Precalculus
& MATH 218-2	and Single-Variable Calculus with Precalculus
& MATH 218-3	and Single-Variable Calculus with Precalculus
MATH 226-0	Sequences and Series
or MATH 230-1	Multivariable Differential Calculus
MATH 240-0	Linear Algebra
MATH 250-0	Elementary Differential Equations

or MATH 240-0	Linear Algebra
or equivalent	

**6 Additional Related Math and Science Courses**

Students must take six courses (and their associated lab, if applicable) from the following options, with maximum three in any one subject.<sup>1</sup>

Course	Title
CHEM 131-0 & CHEM 141-0	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I
CHEM 132-0 & CHEM 142-0	Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II
CHEM 151-0 & CHEM 161-0	General Chemistry I and General Chemistry Laboratory I
CHEM 152-0 & CHEM 162-0	General Chemistry II and General Chemistry Laboratory II
CHEM 171-0 & CHEM 181-0	Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory
CHEM 172-0 & CHEM 182-0	Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory
CHEM 215-1 & CHEM 235-1	Organic Chemistry I and Organic Chemistry Lab I
CHEM 215-2 & CHEM 235-2	Organic Chemistry II and Organic Chemistry Lab II
CHEM 215-3 & CHEM 235-3	Organic Chemistry III and Organic Chemistry Lab III
PHYSICS 135-1 & PHYSICS 136-1	General Physics and General Physics Laboratory
PHYSICS 135-2 & PHYSICS 136-2	General Physics and General Physics Laboratory
PHYSICS 135-3 & PHYSICS 136-3	General Physics and General Physics Laboratory
BIOLOGY SCI 201-0	Molecular Biology
BIOLOGY SCI 202-0 & BIOLOGY SCI 232-0	Cell Biology and Molecular and Cellular Processes Laboratory
BIOLOGY SCI 203-0 & BIOLOGY SCI 233-0	Genetics and Evolution and Genetics and Molecular Processes Laboratory
MATH 226-0	Sequences and Series
MATH 230-2 or MATH 228-2	Multivariable Integral Calculus Multivariable Integral Calculus for Engineering
MATH 240-0	Linear Algebra
MATH 250-0	Elementary Differential Equations

<sup>1</sup> Note: Introductory Chemistry, Physics, Biology, and Math courses may be offered in parallel tracks. Consistent with restrictions at the University level, a student cannot receive credit for some course sequences if credit has already been awarded for an equivalent course. See Chemistry, Physics, Biology, and Math sections of this Catalog for details.

**Honors in Earth and Planetary Sciences**

Majors with strong academic records and an interest in pursuing honors should discuss possible research projects with a faculty member and/or the director of undergraduate studies (DUS) early in their undergraduate career, but no later than spring quarter of their junior year. After the chosen faculty mentor approves a proposed project, research is conducted and students must complete at least two quarters of EARTH 399-0 Independent Study; only one quarter may count

towards major requirements. To earn the honors distinction, students must complete a thesis following the guidance provided in guidelines published on the department webpage.

Students whose grades, research, and written thesis meet departmental criteria are recommended to the college for graduation with honors. For more information, students should consult the director of undergraduate studies and see Honors in the Major (p. 222).

## **Earth and Planetary Sciences Minor**

The minor offers students in any major outside the department a flexible path to improved knowledge of earth and planetary sciences.

### **Minor Requirements (6 units)**

- Two courses from EARTH 201-0, EARTH 202-0, or EARTH 203-0.
- Four 300-level EARTH courses, of which only one EARTH 399-0 or 400-level course may be substituted with permission from the Director of Undergraduate Studies.

## **Earth and Planetary Sciences Second Major for ISP Students**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

### **Second Major for ISP Student Requirements (5 units beyond ISP requirements):**

The Integrated Science Program (ISP) is a highly selective program within Weinberg College. Students majoring in ISP who wish also to complete a major in Earth and Planetary Sciences must fulfill the following requirements (which replace the usual major requirements of the Earth and Planetary Sciences Major (p. 284)):

- EARTH 350-0 Physics of the Earth for ISP must be completed as a course in the ISP major (no substitutions).
- EARTH 201-0 Earth Systems Revealed
- Three 300-level EARTH courses (excluding EARTH 399-0), including at least one from the Analytical/Instrumentation/Field or Spatial Reasoning Skills Requirement lists on the Earth and Planetary Sciences Major page (p. 284)
- One additional 300-level or 400-level EARTH course, or EARTH 399-0 Independent Study

## **Economics**

[economics.northwestern.edu](http://economics.northwestern.edu)

The program in economics enables students to understand the basic concepts, theories, and techniques of economics as they apply to economic problems and policies. These may focus on macroeconomics,

applied microeconomics, quantitative economics, or economic history. Whatever courses students take, they will become familiar with the way economists think about problems and devise solutions to them. Although the program does not offer specialized professional training in economics, it provides excellent preparation for graduate work in economics, the study of law, and careers in business or government. Students should consult a department adviser about field courses that fit their needs.

## **The Teaching of Economics**

Weinberg College students pursuing a major in economics who also wish to be certified for secondary teaching of economics with history must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

### **Programs of Study**

- Economics Major (p. 290)
- Economics Minor (p. 290)
- Economics BA/MA (p. 291)

**ECON 100-BR Introduction to Problem-Solving in Economics (0.5 Unit)** For participants in Bridge I summer program. Developing facility with quantitative tools to solve problems in Economics. Prerequisites: MATH 100-BR and HUM 100-1-BR.

**ECON 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ECON 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ECON 159-0 Doing Good (1 Unit)** A discussion of why we want to "do good"; how to try to do good (and why problems exist in the first place); and, how to know if you did good. Applications to public policy as well as personal life. Prerequisites: None. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

**ECON 201-0 Introduction to Macroeconomics (1 Unit)** An introduction to economics with emphasis on macroeconomics. Topics include: scarcity and choice, elements of supply and demand, inflation, unemployment, recessions, booms, fiscal and monetary policy, international balance of payments, and budget deficits. Prerequisite: basic algebra and graphing. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

**ECON 201-MG Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in ECON 201. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**ECON 201-SG Peer-Guided Study Group: Introduction to Macroeconomics (0 Unit)** Peer-guided study group for students enrolled in ECON 201-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**ECON 202-0 Introduction to Microeconomics (1 Unit)** An introductory course on the fundamentals of microeconomics. The behavior of individuals and firms in deciding on prices and allocation of scarce resources. Topics include: consumer preferences, costs of production, equilibrium prices and output, different market types, potential market failures, and the role of government interventions and public policy.  
 Prerequisite: ECON 201-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ECON 202-MG Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in ECON 202-0. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**ECON 202-SG Peer-Guided Study Group: Introduction to Microeconomics (0 Unit)** Peer-guided study group for students enrolled in ECON 202-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**ECON 249-0 Business Strategy (1 Unit)** Firms' choices of prices, capacity, location, quality, variety, investment and product innovation when navigating complex economic environments shaped by government policy and inter-firm rivalries. (Majors and Minors should not take this course, but should take ECON 349-0 instead. Students may not receive credit if they have completed ECON 349-0). Prerequisites: ECON 202-0; MATH 220-1.

**ECON 281-0 Introduction to Applied Econometrics (1 Unit)** An introduction to econometrics. The underlying theory of regression and the practical application of these techniques to data sets. Understanding and diagnosing common statistical problems encountered during estimation. All other substitutions (including AP Statistics) must be cleared through the Director of Undergraduate Studies for Economics. Prerequisite: ECON 201-0, ECON 202-0, MATH 220-1, STAT 210-0 or higher level statistics class.

#### **ECON 307-0 Economics of Medical Care (1 Unit)**

Application of microeconomics to the study of health insurance and the health care sector. Topics include: design and financing of health insurance, public and private demand for medical care, role of competition, regulation of hospitals and physicians, roles of nonprofit and for-profit organizations, and technological change.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 308-0 Money and Banking (1 Unit)**

The role of money, banking, and financial markets in the modern economy. Topics include: function and history of money, financial flows, evolving nature of banks and their regulation, monetary policy, modern central bank practices, effect of monetary policy on economic outcomes, and the response to financial crises.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

#### **ECON 309-0 Public Finance (1 Unit)**

Understanding the role of government in the economy in theory and practice. Topics include: structure and implications of various tax instruments, role of public debt, and methods for evaluating government expenditures and programs.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 310-1 Microeconomics (1 Unit)**

A more mathematically formal and rigorous treatment of the core concepts of microeconomics introduced in ECON 202-0. Topics include: consumer behavior and the theory of demand, costs of production and the nature of equilibrium in competitive and monopolistic markets.

Prerequisites: ECON 201-0, ECON 202-0, MATH 220-1.

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#### **ECON 310-2 Microeconomics (1 Unit)**

The continuation of the intermediate microeconomics sequence provides tools to analyze social wellbeing, social choice, risk and uncertainty, information asymmetries, competitive independencies between firms (game theory), market spillovers and general equilibrium.

Prerequisite: ECON 310-1.

**ECON 310-MG-1 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in ECON 310-1. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**ECON 310-MG-2 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in ECON 310-2. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**ECON 310-SG-1 Peer-Guided Study Group: Microeconomics I (0 Unit)** Peer-guided study group for students enrolled in ECON 310-1. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**ECON 310-SG-2 Peer-Guided Study Group: Microeconomics II (0 Unit)** Peer-guided study group for students enrolled in ECON 310-2. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

#### **ECON 311-0 Macroeconomics (1 Unit)**

A more mathematically formal and rigorous treatment of the core concepts of macroeconomics introduced in ECON 201-0. Topics include: aggregate consumption, inflation, unemployment, growth, international balances between countries, and the role of monetary and fiscal policy.

Prerequisites: ECON 201-0, ECON 202-0, MATH 220-1.

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#### **ECON 315-0 Topics in Economic History (1 Unit)**

Topics vary and may cover the economic history of a particular country or region, or a specific issue in economic history. May be taken twice for credit with different topics.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

#### **ECON 316-0 Advanced Topics in Macroeconomics (1 Unit)**

This course is for students looking for advanced and rigorous analysis in macroeconomics. Topics vary and may include: growth, business cycles, unemployment and search, monetary economics, macroeconomic policy, inter-temporal choice, and general equilibrium.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0, MATH 220-2, MATH 230-1.

#### **ECON 318-0 History of Economic Thought (1 Unit)**

Development of economic thought from the advent of the mercantilists to the formation of current schools of economics.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

#### **ECON 323-1 Economic History of the United States Before 1865 (1 Unit)**

Economic development of the United States with emphasis on changing structure and performance of the economy. Colonial period to 1865.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

#### **ECON 323-2 Economic History of the United States 1865 to Present (1 Unit)**

Economic development of the United States with emphasis on changing structure and performance of the economy: 1865 to the present.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0. ECON 323-1 is not a prerequisite.

**ECON 324-0 Western Economic History (1 Unit)**

Western European developments from 1750 to the present. Topics include: demographic, technical, social, and economic change.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

**ECON 325-0 Economic Growth & Development (1 Unit)**

Macroeconomic aspects of long-term patterns of economic development, and the examination of differences in the income levels and growth performances across countries. The role of investment, education, population, and technological change in economic growth.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

**ECON 326-0 The Economics of Developing Countries (1 Unit)**

Microeconomic issues in underdeveloped countries. Topics include: land use, labor, migration, credit and microfinance, informal and formal insurance, famine, education and health.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 327-0 Economic Development in Africa (1 Unit)**

Economic change in sub-Saharan Africa, emphasizing current issues and policies in their historical contexts. Agriculture and rural development, industrialization, and international economic relations.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 326-0.

**ECON 328-0 Complexity Economics (1 Unit)**

Relaxing the traditional assumptions of an economy in equilibrium populated by agents who are perfectly rational. Complexity economics is one alternative approach that assumes that markets may not be in equilibrium and that the people in the economy may not perfectly understand their environment. They face fundamental uncertainty in their decision-making.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 329-0 Experimental Economics (1 Unit)**

Application of experimental methods to study economic questions. Students will learn about, participate in, and potentially design, experiments to gain insight into economic theories about decision-making, games, and markets.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 330-0 Behavioral Economics (1 Unit)**

Understanding of how humans make choices in economic situations. The incorporation of psychology and/or sociology into economics to gain deeper insight into economic behavior, to make better predictions, and to generate improved policy prescriptions.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 331-0 Economics of Risk and Uncertainty (1 Unit)**

Models of decision making under uncertainty. Use of these models to understand economic phenomena such as investments in financial assets, insurance, contracting, and auctions.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, MATH 300-0 or equivalent.

**ECON 333-0 Economics of Social Policy (1 Unit)**

Economic concepts and empirical tools to analyze the design and effects of social policies. Topics include the social safety net, health insurance, minimum wage, and taxation.

Prerequisites: Econ 281-0, Econ 310-1, Econ 310-2. SOC\_POL 330-0 and ECON 333-0 are taught together; may not receive credit for both. SESP students must register for SOC\_POL 330-0.

**ECON 335-0 Political Economics (1 Unit)**

The analysis of political motivations and policy outcomes using economic models of social choice theory and voting theory. Application of formal theory to contemporary and historical public policy decisions.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 336-0 Analytic Methods for Public Policy Analysis (1 Unit)**

Study of methodological problems in public policy analysis and an examination of how economists perform policy analysis in practice.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 337-0 Economics of State and Local Governments (1 Unit)**

Economic functions and financing of state and local governments in theory and practice, costs and demands for local public services, and the role of government finance in urban and regional growth.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 339-0 Labor Economics (1 Unit)**

The theory and empirical analysis of employment relationships. Topics include: decision to participate in the labor market, tradeoff between labor and leisure, demand for labor by firms, matching of workers and jobs, role and effect of trade unions, minimum wage legislation, labor mobility, and human capital acquisition.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

**ECON 340-0 Economics of the Family (1 Unit)**

Application of microeconomic theory to the analysis of family issues. Topics include: marriage, cohabitation, decision to have children, divorce, credit and insurance, legacies, bargaining within the household, and division of household labor.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 341-0 Economics of Education (1 Unit)**

The economic analysis of education. Topics include: returns to schooling, individual decisions to invest in education, the production of education, markets for schools and teachers, financing, and public policy.  
 Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 342-0 Economics of Gender (1 Unit)**

Analysis of gender differences in employment, earnings and division of labor in the household. Topics include: the status of women around the world, education, marriage, fertility, labor supply, household decision-making, and discrimination.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 343-0 Economics of Immigration (1 Unit)**

Economic determinants and consequences of international immigration. Who migrates and why? How do immigrants do in the receiving country? How do immigrants affect natives?

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

**ECON 349-0 Industrial Economics (1 Unit)**

Examination of the competitive and cooperative strategies employed by profit-maximizing firms in a wide range of market structures. Topics include: the setting of prices and outputs, product quality and variety, competitive responses, entry barriers, mergers and acquisitions, and relationships with suppliers and distributors.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 350-0 Monopoly Competition & Public Policy (1 Unit)**

Application of microeconomic tools to the problems and issues caused by monopoly power in the context of antitrust law, public utility regulation, and intellectual property. Use of economic theory and landmark legal cases to study the purpose and development of policies to mitigate anti-competitive practices, and highlight currently unresolved public policy debates.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

**ECON 351-0 Law and Economics (1 Unit)**

Use of economic analysis to understand the incentives, workings and efficiency of the legal system. Topics include: torts, contracts, property, criminal law, corporate law, and antitrust and regulation statutes.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 354-0 Issues in Urban and Regional Economics (1 Unit)**

Factors affecting the spatial distribution of economic activity within cities and between different regions of a country. Choice of residential and workplace location. Applications of economic analysis to problems of urban areas such as housing markets, zoning restrictions, and racial and social patterns of employment and housing.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 355-0 Transportation Economics and Public Policy (1 Unit)**

Economics of all forms of transportation and the regulatory and public policy environment in which they operate. Topics include: demand by passengers and freight shippers, costs of production, optimal pricing, regulatory interventions, subsidies, evaluation of investment, and dealing with congestion.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 358-0 Economics of Art and Culture (1 Unit)**

Application of economic analysis to creative and performing arts, and the heritage and cultural industries. The economic organization of the cultural sector and with the behavior of producers, consumers and governments in that sector.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 359-0 Economics of Nonprofit Organizations (1 Unit)**

The economic rationale for the non-profit sector in a mixed economy. Topics include: objectives and behavior of non-profit organizations, competition with commercial firms, volunteerism, and charitable donations.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 360-1 Foundations of Corporate Finance Theory (1 Unit)**

How corporations allocate resources over time as facilitated by capital markets. Topics include: discounting techniques and applications, stock and bond valuation, asset pricing models, diversification and portfolio choice, capital budgeting, and basic option theory.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0. (May not receive credit for both this course and BUS\_INST 304-0. Not for students who have previously taken KELLG\_FE 310-0.).

#### **ECON 360-2 Investments (1 Unit)**

Analysis of the issues and tradeoffs involved in forming a portfolio of financial instruments from the perspectives of individual and institutional investors. (Should not be taken by students who have taken KELLG\_FE 312-0).

Prerequisite: ECON 360-1 or equivalent.

#### **ECON 361-0 International Trade (1 Unit)**

Factors influencing trade in goods and services between countries and the implication of globalization. The reasons for, and the effects of, trade policy instruments such as tariffs, quotas, and voluntary export restrictions.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0.

#### **ECON 362-0 International Finance (1 Unit)**

The determination of exchange rates, international asset prices and flows, currency crises, and the international transmission of macroeconomic disturbances.

Prerequisites: ECON 281-0, ECON 310-1, ECON 311-0.

#### **ECON 371-0 Economics of Energy (1 Unit)**

Analysis of the functioning and regulation of electricity, oil and natural gas markets. Topics include: the role of competition and environmental concerns.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 372-0 Environmental Economics (1 Unit)**

Economic analysis of scarcity and incentives explaining environmental issues such as pollution and climate change. Modeling and evaluation of public policy. (Students may not receive credit for both ECON 370-0 and ECON 372-0).

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 373-0 Natural Resource Economics (1 Unit)**

Evaluation of economics models and public policy concerning natural resources such as farming, fisheries, forests, minerals, ores and fossil fuels. (Students may not receive credit for both ECON 370-0 and ECON 373-0).

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2.

#### **ECON 380-1 Game Theory (1 Unit)**

Game theory is a collection of mathematical models of interaction among decision makers. It is used widely in understanding economic phenomena. This course will present some of the basic ideas of game theory. (Should not be taken by students who have completed MMSS 211-2).

Prerequisites: ECON 310-1, ECON 310-2, MATH 220-2, MATH 230-1.

#### **ECON 380-2 Game Theory (1 Unit)**

This course extends the material presented in ECON 380-1 to explore more advanced models in game theory.

Prerequisite: ECON 380-1 or consent of instructor.

#### **ECON 381-1 Econometrics (1 Unit)**

First part of the specialized sequence in econometrics. A more rigorous and higher level alternative to ECON 281-0. Economics majors completing ECON 381-1 will have the ECON 281-0 requirement waived.

Prerequisites: ECON 310-1, (ECON 310-2, ECON 311-0 recommended), MATH 226-0, MATH 230-1, MATH 230-2, MATH 240-0 and MATH 314-0 (or equivalent).

#### **ECON 381-2 Econometrics (1 Unit)**

Second part of the upper-level econometrics sequence. The course introduces additional econometrics tools beyond those introduced in ECON 381-1. The course also explores the empirical application of these tools, and how to evaluate critically econometric and statistical methods used in policy analysis.

Prerequisite: ECON 381-1, (ECON 310-2, ECON 311-0 recommended).

#### **ECON 383-0 Applied Econometrics (1 Unit)**

Methods for using actual data together with modern software to build, assess critically, and interpret econometric models of real world phenomena and policy issues.

Prerequisites: ECON 281-0, ECON 310-1.

#### **ECON 398-1 Senior Seminar (1 Unit)**

For students of superior ability. Original research on a topic of interest to the student, culminating in a senior thesis. By department invitation only. Grade of K given in 398-1.

Prerequisites: ECON 281-0, ECON 310-1, ECON 310-2, ECON 311-0, MATH 220-2, MATH 230-1; at least four 300-level economics electives.

#### *Advanced Expression*

#### **ECON 398-2 Senior Seminar (1 Unit)**

For students of superior ability. Original research on a topic of interest to the student, culminating in a senior thesis. By department invitation only. Prerequisite: ECON 398-1.

#### *Advanced Expression*

#### **ECON 399-0 Independent Study (1 Unit)**

Advanced work through reading, research, and discussion to build on economics coursework

taken by the student. Project to be decided by mutual agreement with a faculty member.

## **Economics Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The introductory courses ECON 201-0 Introduction to Macroeconomics and ECON 202-0 Introduction to Microeconomics must be taken first and in that order. STAT 210-0 Introduction to Probability and Statistics and MATH 220-1 Single-Variable Differential Calculus should also be taken early in the program; the former is a prerequisite for ECON 281-0 Introduction to Applied Econometrics and the latter for ECON 310-1 Microeconomics. ECON 281-0 and the intermediate theory courses should be completed before 300-level field courses are taken. Although only MATH 220-1 is required, majors are strongly urged to take MATH 220-2 Single-Variable Integral Calculus, MATH 230-1 Multivariable Differential Calculus, and MATH 240-0 Linear Algebra. Majors considering graduate work in economics are strongly advised to take additional mathematics courses and perhaps a second major in mathematics. Students wishing to pursue in-depth study of econometrics may take the advanced econometrics courses ECON 381-1 and ECON 381-2 without taking introductory econometrics ECON 281-0 first. For students who complete ECON 381-1, ECON 281-0 will be waived.

Course	Title
<b>Department Courses (12 units)</b>	
3 introductory courses:	
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics
ECON 281-0	Introduction to Applied Econometrics
3 intermediate theory courses:	
ECON 310-1	Microeconomics
ECON 310-2	Microeconomics
ECON 311-0	Macroeconomics
6 additional field courses at the 300 level	
<b>Related Courses</b>	
MATH 220-1 or MATH 218-2	Single-Variable Differential Calculus <sup>1</sup> Single-Variable Calculus with Precalculus
STAT 210-0 or MATH 314-0	Introduction to Probability and Statistics <sup>2</sup> Probability and Statistics for Econometrics

<sup>1</sup> A math course at a higher level than MATH 220-1 may be applied instead. MATH 220-1 (or higher) credit granted based on AP or IB testing may be applied.

<sup>2</sup> STAT 210-0 credit based on AP or IB test may be applied. MATH 385-0 or equivalent course may be applied.

## **Joint Major in Economics for MMSS Students**

In addition to taking all of the required Mathematical Methods in the Social Sciences (p. 361) courses, students must take the following in

order to complete a joint major in economics (for triple major limitations see MMSS Adjunct Major (p. 361)).

Course	Title
<b>Department Courses (7 units)</b>	
1 introductory course:	
ECON 201-0	Introduction to Macroeconomics
1 intermediate theory course:	
ECON 311-0	Macroeconomics
5 additional field courses at the 300 level. <sup>1</sup>	

<sup>1</sup> These courses can include ECON 310-2 Microeconomics, but cannot include ECON 380-1 Game Theory, ECON 380-2 Game Theory, ECON 381-1 Econometrics, or ECON 381-2 Econometrics.

## **Economics Major for Industrial Engineering**

Students completing the Industrial Engineering Degree (p. 194) may complete a major in economics with some industrial engineering courses double-counted towards both programs of study as described below.

Course	Title
Substitute for introductory course ECON 281-0:	
IEMS 304-0	Statistical Learning for Data Analysis
Count as one of the six 300-level field courses:	
IEMS 373-0	Intro to Financial Engineering
Substitute for related course STAT 210-0:	
IEMS 303-0	Statistics

## **Honors in Economics**

By invitation only, majors with strong academic records may pursue departmental honors by completing one of the following three options in addition to the regular requirements of the major: Senior Seminars ECON 398-1 and ECON 398-2, 2 quarters of ECON 399-0 Independent Study, or 2 400-level field courses in economics. None of these courses counts toward the major requirements. Under each option, candidates must submit a thesis presenting original research.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. Interested students should consult with the director of undergraduate studies and see Honors in the Major (p. 222).

## **Economics Minor**

The minor offers training in economic theory through the intermediate level, instruction in quantitative methods of econometrics, and opportunity for advanced work in students' areas of interest. The introductory and intermediate courses are the same as those in the major, except that only 2 of the intermediate theory courses are required (ECON 310-1 Microeconomics and either ECON 310-2 Microeconomics or ECON 311-0 Macroeconomics). As in the major, MATH 220-1 Single-Variable Differential Calculus and STAT 210-0 Introduction to Probability and Statistics must be taken early in the program because they are prerequisites for required courses. Students wishing to pursue in-depth study of econometrics may take advanced econometrics ECON 381-1 and ECON 381-2 without taking introductory econometrics ECON 281-0 first. For students who complete ECON 381-1, ECON 281-0 will be waived.

Course	Title
<b>Minor Requirements (8 units)</b>	
3 introductory courses:	
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics
ECON 281-0	Introduction to Applied Econometrics
2 intermediate theory courses:	
ECON 310-1	Microeconomics
ECON 310-2	Microeconomics
or ECON 311-0	Macroeconomics
3 additional field courses at the 300 level	

## Economics Minor for Industrial Engineering

Students completing the Industrial Engineering Degree (p. 194) may double-count one industrial engineering course with the minor in economics as described below.

Course	Title
Substitute for introductory course ECON 281-0:	
IEMS 304-0	Statistical Learning for Data Analysis
OR	
Count as one of the three 300-level field courses:	
IEMS 373-0	Intro to Financial Engineering

## Economics BA/MA

The department offers a BA/MA for outstanding students in economics. Graduate-level courses in economic theory are required. Interested students should consult the director of undergraduate studies during their sophomore year.

Information about degree requirements can be found in the Graduate Catalog section describing the combined BA/MA in Economics (<https://catalogs.northwestern.edu/tgs/economics/economics-bach-mast/>).

## Empirical and Deductive Reasoning

Empirical and Deductive Reasoning (FD-EDR) is one of the six Foundational Disciplines that are part of the WCAS bachelor's degree.

We learn about the world in two main ways: empirically, from observations, and by making logical deductions from what we already know or conjecture. Courses in this discipline teach students to use these two modes of inference.

Empirical conclusions, derived from observations about the world, come with uncertainties or probabilities. Courses in empirical reasoning teach students to apply statistical reasoning to interpret evidence, to estimate the uncertainties inherent in their conclusions, and to build theoretical models based on data.

We also reason by deduction from axioms we take as certain, or from conjectural models of the real world. Courses in this discipline teach students both the power and limitations of such formal reasoning. Students will learn to create and analyze chains of mathematical or logical deductions, or computational algorithms.

## Learning objectives for FD-EDR

Courses in Empirical and Deductive Reasoning are designed to achieve a combination of the following learning outcomes:

- Recognize empirical versus deductive modes of inference
- Articulate the power and the limitations of statistical reasoning, including the quantification of uncertainties in data
- Recognize the dangers of reasoning biases, including conclusions from anecdotal evidence, and the limits of when causal claims can be made from correlational data
- Learn to create and analyze formal models of real world phenomena
- Appreciate the power of abstraction in applying similar formal constructs to a range of different problems
- Learn to clearly and persuasively communicate both empirical and logical arguments, via writing, presentation, and graphical formats

## FD-EDR Courses

Courses approved for the 2024-2025 academic year.

Course	Title
BIOL SCI 337-0	Biostatistics
BIOL SCI 338-0	Modeling Biological Dynamics
COG SCI 202-0	Evaluating Evidence
COMP SCI 110-0	Introduction to Computer Programming
COMP SCI 111-0	Fundamentals of Computer Programming
COMP SCI 150-0	Fundamentals of Computer Programming 1.5
EARTH 361-0	Scientific Programming in Python
LING 260-0	Formal Analysis of Words & Sentences
LING 270-0	Meaning
LING 330-0	Research Methods in Linguistics
LING 334-0	Introduction to Computational Linguistics
MATH 100-0	Quantitative Reasoning
MATH 202-0	Finite Mathematics
MATH 211-0	Short Course in Calculus
MATH 218-1	Single-Variable Calculus with Precalculus
MATH 218-2	Single-Variable Calculus with Precalculus
MATH 218-3	Single-Variable Calculus with Precalculus
MATH 220-1	Single-Variable Differential Calculus
MATH 220-2	Single-Variable Integral Calculus
MATH 226-0	Sequences and Series
MATH 228-1	Multivariable Differential Calculus for Engineering
MATH 228-2	Multivariable Integral Calculus for Engineering
MATH 230-1	Multivariable Differential Calculus
MATH 230-2	Multivariable Integral Calculus
MATH 235-0	Series and Multiple Integrals
MATH 240-0	Linear Algebra
MATH 250-0	Elementary Differential Equations
MATH 281-1	Accelerated Mathematics for ISP. First Year
MATH 281-2	Accelerated Mathematics for ISP. First Year
MATH 281-3	Accelerated Mathematics for ISP. First Year
MATH 285-1	Accelerated Mathematics for MMSS
MATH 285-2	Accelerated Mathematics for MMSS
MATH 285-3	Accelerated Mathematics for MMSS
MATH 290-1	MENU: Linear Algebra and Multivariable Calculus
MATH 290-2	MENU: Linear Algebra and Multivariable Calculus
MATH 290-3	MENU: Linear Algebra and Multivariable Calculus

MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus
MATH 291-2	MENU: Intensive Linear Algebra and Multivariable Calculus
MATH 291-3	MENU: Intensive Linear Algebra and Multivariable Calculus
PHIL 150-0	Elementary Logic I
PHIL 250-0	Elementary Logic II
POLL SCI 210-0	Introduction to Empirical Methods in Political Science
POLI SCI 212-0	Evaluating Evidence
POLI SCI 312-0	Statistical Research Methods
PSYCH 201-0	Statistical Methods in Psychology
PSYCH 205-0	Research Methods in Psychology
PSYCH 333-0	Psychology of Thinking
SOCIOl 303-0	Analysis and Interpretation of Social Data
STAT 201-0	Introduction to Programming for Data Science
STAT 202-0	Introduction to Statistics and Data Science
STAT 210-0	Introduction to Probability and Statistics
STAT 228-0	Series and Multiple Integrals

## English

[english.northwestern.edu](http://english.northwestern.edu)

The Department of English values various kinds of critical inquiry and creativity. While some courses emphasize the formal qualities of literary works, others address such questions as what counts as "literary," or how to characterize the relationships among literature, culture, and politics. Classes might discuss psychoanalysis, race and gender, or the history of the book. While courses have different approaches, methods, and emphases and the texts examined vary, all courses stress close reading and careful analysis of texts, whether written or visual. Reflecting both range and specificity, the curriculum enables students to pursue their areas of interest within a broader understanding of literary history and the range of literary study. In its creative writing courses the department offers training in verse, fiction, and creative nonfiction. Virtually all courses also include practice in writing clear, concise, and persuasive expository prose.

Rigorous training in thinking and writing is valuable for any career, including law, IT, communications, marketing, consulting, finance, and business as well as writing, publishing, and the teaching of English at all levels. Courses in English and American literature also help students to hone their skills as critical citizens of global communities.

The department takes pride in its diversity of perspectives. In addition to teaching classes in the department, English faculty contribute substantially to the course offerings in theater, drama, and comparative literature, as well as American, African American, Asian American, Latina and Latino, and gender and sexuality studies. Professors have taught courses in conjunction with the Newberry Library and other Chicago institutions.

## Majors in English

A complete description of undergraduate English major programs may be obtained from the department office and website. Detailed descriptions of courses to be offered for the year are posted the preceding spring in English Course Listings (<https://www.english.northwestern.edu/courses/>) on the department website.

English majors may ask any member of the department to serve as an academic adviser. A quarterly meeting with the adviser to discuss course selection and progress is strongly recommended.

## Minors in English

The department offers a minor in literature and two minor tracks in creative writing; all offer experience in reading literary texts and writing critical analysis.

## The Teaching of English

Weinberg College students pursuing a major in English who also wish to be certified for secondary teaching must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## Related Programs

Literature courses appear in the curricula of other Weinberg College departments, including African American studies, American studies, Asian American studies, comparative literary studies, drama, and gender and sexuality studies. See also the Writing Program (p. 451) for a list of composition (expository writing) courses.

## Programs of Study

- English Major (<https://catalogs.northwestern.edu/undergraduate/arts-sciences/english/english-literature-major/>)
- Creative Writing Major (p. 298)
- English Minor (<https://catalogs.northwestern.edu/undergraduate/arts-sciences/english/english-minor/>)
- Creative Writing Sequence-Based Minor (p. 298)
- Creative Writing Cross-Genre Minor (p. 299)

**ENGLISH 100-SW Summer Academic Workshop in Writing (1 Unit)** An introduction to college writing. Students learn how to use a process of planning, drafting, revising, and editing to write papers that are clear, concise, interesting, and persuasive.

**ENGLISH 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ENGLISH 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ENGLISH 105-0 Expository Writing (1 Unit)** Emphasizes all phases of the composition process, research methods, and critical thinking. Careful review of student papers and reports. May be repeated for credit with different topic.

**ENGLISH 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ENGLISH 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written

communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ENGLISH 106-1 Writing in Special Contexts (0.5 Unit)** Introduction to expository writing similar to ENGLISH 105-0 but paired with a course in another discipline.

**ENGLISH 106-2 Writing in Special Contexts (0.5 Unit)** Introduction to expository writing similar to ENGLISH 105-0 but paired with a course in another discipline.

**ENGLISH 200-0 Literary Histories (1 Unit)** Content varies, but all versions of this course engage with at least 200 years of literature from a particular tradition, genre, or theme, with an emphasis on literary history and narratives of continuity and change over time. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 202-0 Introduction to Creative Writing (1 Unit)** Forms and techniques of poetry, fiction, and creative nonfiction.

**ENGLISH 205-0 Intermediate Composition (1 Unit)** Expository writing at an intermediate level. Emphasis on techniques for writing clearly, precisely, and persuasively. May be repeated for credit with different topic.

**ENGLISH 206-0 Reading & Writing Poetry (1 Unit)** Forms and techniques of verse. May not be taken earlier than winter quarter of the first year. Seniors may enroll only with department consent.

**ENGLISH 207-0 Reading and Writing Fiction (1 Unit)** Forms and techniques of fiction.

**ENGLISH 208-0 Reading & Writing Creative Non-Fiction (1 Unit)** Forms and techniques of creative nonfiction.

**ENGLISH 209-0 Topics in Genre Writing (1 Unit)** Forms and techniques of genre writing (e.g., screenwriting, young adult fiction, adaptation, memoir). May be repeated for credit with different topic.

**ENGLISH 210-1 British Literary Traditions (1 Unit)** Chronological survey of British literature in its cultural contexts from Beowulf to the 18th century. Suitable for majors and nonmajors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 210-2 British Literary Traditions (1 Unit)** Chronological survey of British literature in its cultural contexts from the late 18th century to the present day. Suitable for majors and nonmajors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 211-0 Introduction to Poetry (1 Unit)** Introduction to poetic analysis across a wide range of authors and periods, with emphasis on poetry's formal elements, genre conventions, and the historical, material, and cultural conditions that shape them. Suitable for majors and nonmajors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 212-0 Introduction to Drama (1 Unit)** Introduction to the fundamental elements of drama as perceived in performance, exploring how dramatic works communicate from text to stage to audience. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 213-0 Introduction to Fiction (1 Unit)** Introduction to the analysis of prose fiction from the 18th century to the present day, with special attention to narrative strategies and their historical and cultural contexts. Suitable for majors and nonmajors. No prior knowledge of

the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 214-0 Introduction to Film and Its Literatures (1 Unit)**

Introduction to the theory and practice of formal film analysis. Students will gain a critical overview of multiple forms of film-related writing, including historical scholarship, film theory, popular reviews, legal documents, manifestos, and movie-inspired fiction. Suitable for majors and nonmajors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 215-0 Topics in Literature, Film, and Media (1 Unit)** In contrast to ENGLISH 214-0, which introduces students to a wider mix of literary, cinematic, and media traditions, this course explores specific topics, forms, periods, or genres in greater depth. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 220-0 The Bible as Literature (1 Unit)** Selected books of the Hebrew bible and New Testament studied from a literary perspective. Students will consider issues of plot, character, genre, narrative strategy, and theories of interpretation. Suitable for majors and nonmajors. No prior knowledge of the field is expected. Students may not receive credit if they took the same class as the former COMP\_LIT 210-0. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 234-0 Introduction to Shakespeare (1 Unit)** Introduction to representative Shakespearean plays, including comedies, tragedies, and romances. Suitable for majors and nonmajors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 265-0 Introduction to Postcolonial Literature (1 Unit)**

Introduces the field of postcolonial literary studies, including a critical overview of key terms and major debates. Students will read selected postcolonial literary works, paying particular attention to their formal properties, alongside theoretical and historical texts on colonialism and its aftermath. Suitable for majors and nonmajors. No prior knowledge of the field is expected. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 266-0 Introduction to African American Literature (1 Unit)**

Literature of Black people in the United States from slavery to freedom. Works of major writers and significant but unsung bards of the past. Taught with AF\_AM\_ST 210-0; may receive credit for only 1 of these courses. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 267-0 Topics in African American Literature (1 Unit)** Content varies. In contrast to ENGLISH 266-0, which offers a broad survey of the field, this course explores particular topics in African American literature in greater depth. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 270-1 American Literary Traditions (1 Unit)** Representative

writers and works of American literature in cultural context. Works discussed range from culture contact to the Civil War. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 270-2 American Literary Traditions (1 Unit)** Representative

19th- and 20th-century works of American literature in cultural context. Suitable for majors and non-majors. No prior knowledge of the field is

expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 273-0 Introduction to 20th-Century American Literature (1 Unit)** Representative works of American literature since World War I. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 274-0 Introduction to Native American and Indigenous Literatures (1 Unit)** Survey of Native American and Indigenous literatures from pre-contact periods to the present. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 275-0 Introduction to Asian American Literature (1 Unit)** Survey of Asian American literature from the early 20th century to the present, covering a range of genres and ethnicities. Suitable for majors and non-majors. No prior knowledge of the field is expected. Taught with ASIAN\_AM 275-0; may receive credit for only 1 of these courses. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 276-0 Topics in Asian American Literature (1 Unit)** Content varies. In contrast to ENGLISH 275-0, which offers a broad survey of the field, this course explores particular topics in Asian American literature in greater depth. Suitable for majors and non-majors. No prior knowledge of the field is expected. Taught with ASIAN\_AM 276-0. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 277-0 Introduction to Latinx Literature (1 Unit)** Surveys major writers and movements from the Spanish colonial era to the present, covering a range of genres and ethnicities. Suitable for majors and non-majors. No prior knowledge of the field is expected. Taught with LATINO 277-0 and SPANISH 277-0; may receive credit for only 1 of these courses. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 280-0 Topics in Multiethnic Literature (1 Unit)** Although content varies depending on the specific course topic, all versions of this course examine the ways in which American ethnic identity has been constructed and discussed through literature. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 281-0 Topics in Postcolonial & Comparative Literatures (1 Unit)** Content varies. In contrast to ENGLISH 280-0, which offers a broad survey of the field, this course explores particular topics in postcolonial and comparative literatures in greater depth. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 282-0 Writing and Speaking in Business (1 Unit)** Emphasizes writing and speaking to inform and persuade audiences in business contexts to achieve business goals. Attention to clear, compelling, and well-organized written and oral communication.

**ENGLISH 283-0 Introduction to Literature and the Environment (1 Unit)** Studies in literature and other media oriented by ecological thinking. An introduction to the ways in which language, literature, and aesthetic production shape ideas about nature, varying widely across historical and cultural contexts. Suitable for majors and nonmajors. No prior knowledge

of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 284-0 Topics in Literature and the Environment (1 Unit)** Content varies. In contrast to ENGLISH 283-0, which offers a broad survey of the field, this course explores particular topics in greater depth. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 285-0 Topics in Literature and Culture (1 Unit)** Although content varies depending on the course topic, all versions of this course explore literary texts in their cultural contexts. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Literature and Arts Foundational Discipline*

**ENGLISH 287-0 Topics in Global Literatures (1 Unit)** Although content varies depending on the course topic, all versions of this course explore literary texts written outside of Britain and the United States. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 288-0 Topics in Literature and Ethics (1 Unit)** Although content varies depending on the course topic, all versions of this course explore literary texts that emerge from, and speak back to, ethical and/or religious traditions. Suitable for majors and non-majors. No prior knowledge of the field is expected. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 300-0 Seminar in Reading and Interpretation (1 Unit)** Close reading of literary works in the light of various critical methodologies in literary study, with an emphasis on developing skills in qualitative analysis and oral and written expression. Required for English literature majors and minors; recommended for Creative Writing majors and minors. Offers good preparation for higher-level literary study. May be taken only once. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 302-0 History of the English Language (1 Unit)** Examines the history of English from its origins to the present day, with particular attention to the relationship between language and social power, including efforts to elevate the status of certain forms of English and the dynamics of self-consciously "low" registers of language such as slang and obscenity. Recommended for students with prior coursework in English, History, or Linguistics.

*Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 304-0 Practical Rhetoric (1 Unit)** The theory of writing and skills that underlie good writing; primarily for teachers in secondary schools and universities.

**ENGLISH 305-0 Advanced Composition (1 Unit)** This course is for undergraduate students in their second year or above who want to develop their abilities to write in different styles and for different audiences. *Advanced Expression*

**ENGLISH 306-0 Advanced Poetry Writing (1 Unit)** Content varies. May be repeated for credit with different topic. Prerequisite: ENGLISH 206-0, ENGLISH 207-0, ENGLISH 208-0, or Department consent.

**ENGLISH 307-0 Advanced Fiction Writing (1 Unit)** Content varies. May be repeated for credit with different topic. Prerequisite: ENGLISH 206-0, ENGLISH 207-0, ENGLISH 208-0, or Department consent.

**ENGLISH 308-0 Advanced Creative Nonfiction Writing (1 Unit)** Content varies. May be repeated for credit with different topic. Prerequisite: ENGLISH 206-0, ENGLISH 207-0, ENGLISH 208-0, or department consent.

**ENGLISH 309-0 Advanced Creative Cross-Genre Writing (1 Unit)**

Content varies. May be repeated twice for credit with a different topic. Prerequisite: ENGLISH 206-0, ENGLISH 207-0, ENGLISH 208-0, or department consent.

**ENGLISH 310-0 Studies in Literary Genres (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine the history, deployment, and function of literary genres in a range of texts and periods. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 311-0 Studies in Poetry (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore a wide range of authors and periods, with emphasis on poetry's formal elements, genre conventions, and the historical, material, and cultural conditions that shape them. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 312-0 Studies in Drama (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore elements of drama as perceived in performance, examining how dramatic works communicate from text to stage to audience. Recommended for students with prior coursework in English, Theatre, Performance Studies, or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 313-0 Studies in Fiction (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine how authors have developed and contested fictional forms across a range of texts and periods, with special attention to narrative strategies and their historical and cultural contexts.

Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 322-0 Medieval Drama (1 Unit)**

Examines the 15th-century English mystery cycles, miracle plays, and morality plays in their cultural contexts. Recommended for students with prior coursework in English, Theater, Performance Studies, or a related discipline.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 323-1 Medieval Poetry (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine medieval narrative and lyric poetry in their cultural contexts. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 324-0 Studies in Medieval Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine literature composed during the Middle Ages (c.

500 – c. 1500) across a range of potential themes, forms, and genres. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 331-0 Renaissance Poetry (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine narrative and/or lyric poetry from the early modern period (c. 1500 – 1660) in its cultural context. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 332-0 Renaissance Drama (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine dramatic works from the early modern period (c. 1500 – 1660) in their cultural contexts. Authors studied may include Shakespeare, Marlowe, Jonson, Webster. Recommended for students with prior coursework in English, Theater, Performance Studies, or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 338-0 Studies in Renaissance Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine works from the early modern period (c. 1500 – 1660), exploring both literary forms and cultural contexts. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 339-0 Studies in Shakespeare (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine the works of Shakespeare in their cultural contexts. Recommended for students with prior coursework in English, Theater, Performance Studies, or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 340-0 Studies in 18th-Century Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore works composed in the 18th century in their intellectual and cultural contexts. Potential genres include poetry, fiction, and nonfiction. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 344-0 18th-Century Fiction (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine 18th century prose fiction, with attention to the development of the novel as literary form. Authors may include Austen, Burney, Defoe, Equiano, Fielding, Radcliffe, Richardson, Sterne. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 351-0 Romantic Poetry (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine poetry composed during the Romantic era

(c. 1790-1850) in its cultural context. Authors may include Blake, Wordsworth, Coleridge, Byron, Shelley, Keats. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 353-0 Studies in Romantic Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine literature composed during the Romantic period (c. 1790-1850) in its cultural context. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 357-0 19th-Century British Fiction (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine 19th century prose fiction in its cultural context, with attention to the development of the novel as a literary form. Authors may include Shelley, the Brontë sisters, Collins, Dickens, Eliot, Gaskell, Hardy, James, Thackeray, Trollope, Wilde. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 359-0 Studies in 19th-Century Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine literature written in English between 1800 and 1900. Students will consider how genre, narrative form, style, and cultural context shaped this era of literature. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 361-0 20th and 21st Century Poetry (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore 20th and 21st century lyric and narrative poetry. Will explore how modern and contemporary poetry creates meaning and elicits response, examining both forms and contexts. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 363-0 20th and 21st Century Fiction (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine 20th and 21st century prose fiction in its cultural contexts. Students will consider how authors used genre and narrative form to explore identity and grapple with aspects of modernity and postmodernity. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 365-0 Studies in Postcolonial Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine postcolonial literary works produced outside of Britain and the United States. Students will read selected works, examine their formal properties, and consider theoretical and historical texts on colonialism and its aftermath. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 366-0 Studies in African American Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine African American literature in its cultural contexts. Students will read selected primary texts alongside theoretical works. Recommended for students with prior coursework in English, Black Studies, or a related discipline. May be repeated for credit with a different topic.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

#### **ENGLISH 368-0 Studies in 20th- and 21st-Century Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine literature of the 20th and 21st centuries in its cultural contexts. Students will consider how writers use genre, form, and style to explore identity and grapple with aspects of modernity and postmodernity. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 369-0 Studies in African Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore literature written by African authors, with an emphasis on 20th and 21st century Anglophone texts. Students will read selected primary texts alongside essential theoretical works. Recommended for students with prior coursework in English, African Studies, or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 371-0 American Novel (1 Unit)**

Although content varies depending on the course topic, all versions of this course situate American novels within their cultural contexts. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 372-0 American Poetry (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine American poetry in its cultural contexts. Students will consider poetry's formal elements, genre conventions, and the historical, material, and cultural conditions that shape them. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 374-0 Studies in Native American and Indigenous Literatures (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore Native American and Indigenous literatures in their cultural contexts. Texts may be drawn from any era from the pre-contact period to the present. Recommended for students with prior coursework in English, Native American and Indigenous Studies, or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

#### **ENGLISH 375-0 Studies in Asian American Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore Asian American literature in its cultural contexts. Selected texts

range from the early 20th century to the present and engage with a range of genres and ethnicities. Recommended for students with prior coursework in English, Asian American Studies, or a related discipline. May be repeated for credit with a different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 377-0 Topics in Latinx Literature (1 Unit)** Although content varies depending on the course topic, all versions of this course examine Latinx literature in its cultural contexts. Selected texts range from the Spanish colonial era to the present and engage with a range of genres and ethnicities. Recommended for students with prior coursework in English, Latinx Studies, or a related discipline. May be repeated for credit with a different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

#### **ENGLISH 378-0 Studies in American Literature (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore American literature from the contact period to the present day. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 380-0 Studies in Multiethnic American Literature (1 Unit)**

Although content varies depending on the specific course topic, all versions of this course examine the ways in which American ethnic identity has been constructed and discussed in literary works. Recommended for students with prior coursework in English, Asian American Studies, Black Studies, Latinx Studies, or a related discipline. May be repeated for credit with different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENGLISH 381-0 Literature & Medicine (1 Unit)** Although content varies depending on the course topic, all versions of this course explore medicine through a variety of literary media. Potential subjects of study include illness, ageing, medical treatment, wellness culture, and doctor-patient relationships. Recommended for students with prior coursework in English, pre-health fields, or related disciplines. May be repeated for credit with a different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 382-0 Literature and Law (1 Unit)** Although content varies depending on the course topic, all versions of this course explore the representation of law in literature and culture, and how law uses language. Students may perform literary analyses of legal discourse alongside literary texts. Recommended for students with prior coursework in English, Legal Studies, or a related discipline. May be repeated for credit with different topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 383-0 Special Topics in Theory (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine literature and culture through the lens of key topics and debates in literary theory. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 384-0 Studies in Literature and the Environment (1 Unit)**

Although content varies depending on the course topic, all versions of this course examine the ways in which language, literature, and aesthetic production shape ideas about nature, varying widely across historical

and cross-cultural contexts. Potential subjects of study include the literature of climate crisis, environmental racism and justice, human and nonhuman relations, catastrophe studies, ecopoetics, and the energy humanities. Recommended for students with prior coursework in English, Environmental Policy and Culture, or related disciplines. May be repeated for credit with different topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 385-0 Studies in Literature and Culture (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore the intersection between literature and culture. Recommended for students with prior coursework in English or a related discipline. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 386-0 Studies in Literature and Film (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore literature and film as complementary modes of narrative communication. Recommended for students with prior coursework in English, Radio/Television/Film, or related disciplines. May be repeated for credit with a different topic.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 388-0 Studies in Literature and Ethics (1 Unit)** Although content varies depending on the course topic, all versions of this course explore literary texts that emerge from, and speak back to, ethical and/or religious traditions. Recommended for students with prior coursework in English, Religious Studies, Philosophy, or related disciplines. May be repeated for credit with a different topic. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **ENGLISH 389-0 Studies in Gender, Sexuality and Embodiment (1 Unit)**

Although content varies depending on the course topic, all versions of this course explore gender, sexuality, and embodiment. Students will examine literature and literary theories with a particular emphasis on the tangibility of the body. Possible topics include women's writing, LGBTQ + literature, and disability studies. Recommended for students with prior coursework in English, Gender and Sexuality Studies, or a related discipline. May be repeated for credit with a different topic.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 392-0 The Situation of Writing (1 Unit)** The sociology of writers, writing, publication, dissemination of literature, and reading. Prerequisite: admission to writing major.

**ENGLISH 393-1 Theory and Practice of Poetry (1 Unit)** Tenets of poetry in English, including prosody, form, metaphor, voice, experimentation; involves intensive writing practice and culminates in the production of a long poem. Prerequisite: admission to creative writing sequence.

**ENGLISH 393-2 Theory and Practice of Poetry (1 Unit)** Tenets of poetry in English, including prosody, form, metaphor, voice, experimentation; involves intensive writing practice and culminates in the production of a long poem. Prerequisite: admission to creative writing sequence.

**ENGLISH 393-3 Theory and Practice of Poetry (1 Unit)** Tenets of poetry in English, including prosody, form, metaphor, voice, experimentation; involves intensive writing practice and culminates in the production of a long poem. Prerequisite: admission to creative writing sequence.

**ENGLISH 394-1 Theory & Practice of Fiction (1 Unit)** Tenets of fictional realism and its substitutes; practice in different applications of plot,

narrative technique, point of view; culminates in the writing of a novella.  
Prerequisite: admission to creative writing sequence.

**ENGLISH 394-2 Theory & Practice of Fiction (1 Unit)** Tenets of fictional realism and its substitutes; practice in different applications of plot, narrative technique, point of view; culminates in the writing of a novella.  
Prerequisite: admission to creative writing sequence.

**ENGLISH 394-3 Theory & Practice of Fiction (1 Unit)** Tenets of fictional realism and its substitutes; practice in different applications of plot, narrative technique, point of view; culminates in the writing of a novella.  
Prerequisite: admission to creative writing sequence.

**ENGLISH 395-1 Theory and Practice of Creative Nonfiction (1 Unit)**

Tenets of creative nonfiction; practice in different styles, form, and modes; culminates in the writing of a long creative nonfiction project.  
Prerequisite: admission to creative writing sequence.

**ENGLISH 395-2 Theory and Practice of Creative Nonfiction (1 Unit)**

Tenets of creative nonfiction; practice in different styles, form, and modes; culminates in the writing of a long creative nonfiction project.  
Prerequisite: admission to creative writing sequence.

**ENGLISH 395-3 Theory and Practice of Creative Nonfiction (1 Unit)**

Tenets of creative nonfiction; practice in different styles, form, and modes; culminates in the writing of a long creative nonfiction project.  
Prerequisite: admission to creative writing sequence.

**ENGLISH 397-0 Research Seminar for Literature Majors (1 Unit)**

Although content varies depending on the course topic, all versions of this course teach the advanced research skills needed to write an extended essay on a literary topic. Students will learn how to develop an original argument and situate it within appropriate theoretical and literary critical frameworks. Recommended for junior and senior English literature majors and senior English literature minors. Students intending to pursue honors in English literature must take this course no later than spring quarter of the junior year.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ENGLISH 398-1 Honors Sequence (1 Unit)** The first course in a two-course sequence for seniors preparing an honors essay in the literature major. Students pursue individual research topics under the direction of the departmental honors coordinator and a faculty advisor. Admission by application only. Students will receive a K grade pending completion of the honors thesis.

**ENGLISH 398-2 Honors Sequence (1 Unit)** The second course in a two-course sequence for seniors preparing an honors essay in the literature major. Students pursue individual research topics under the direction of the departmental honors coordinator and a faculty advisor. Admission by application only. Students will receive a K grade pending completion of the honors thesis.

**ENGLISH 399-0 Independent Study (1 Unit)** Individual projects with faculty guidance. Open to majors with junior or senior standing and to senior minors. May be elected two times, but only 1 unit at a time.  
Prerequisite: consent of department.

## Creative Writing Major

Students may apply to major in creative writing. Admission to the creative writing major is competitive, based on a manuscript of creative work from ENGLISH 206-0 Reading & Writing Poetry, ENGLISH 207-0 Reading and Writing Fiction, or ENGLISH 208-0 Reading & Writing Creative Non-Fiction. The major offers an apprenticeship in the writing of poetry, fiction, and creative nonfiction. A strong literature component and a course in

the history and culture of literary production anchor the writing within a context of general literacy.

The department accepts applications to the creative writing major early each spring. First year students may not apply.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Department Courses (13 units)</b>	
<i>3 introductory courses:</i>	
ENGLISH 206-0	Reading & Writing Poetry
ENGLISH 207-0	Reading and Writing Fiction
ENGLISH 208-0	Reading & Writing Creative Non-Fiction
<i>10 additional courses:</i>	
1 yearlong theory and practice sequence:	
ENGLISH 393-1 & ENGLISH 393-2 & ENGLISH 393-3	Theory and Practice of Poetry and Theory and Practice of Poetry and Theory and Practice of Poetry
or ENGLISH 394-1 & ENGLISH 394-2 & ENGLISH 394-3	Theory & Practice of Fiction and Theory & Practice of Fiction and Theory & Practice of Fiction
or ENGLISH 395-1 & ENGLISH 395-2 & ENGLISH 395-3	Theory and Practice of Creative Nonfiction and Theory and Practice of Creative Nonfiction and Theory and Practice of Creative Nonfiction
ENGLISH 392-0	The Situation of Writing
6 300-level English department literature courses	
At least 2 on works written before 1830	
At least 2 on works written after 1830	
<b>Related Courses (2 units)</b>	
Chosen from fields outside of literature but still related to the student's demonstrated interests within the major	
Selected with the advice and consent of the student's writing major adviser	

## Honors in Creative Writing

Creative writing majors who are completing the yearlong theory and practice sequence in poetry, fiction, or creative nonfiction and who have kept up with their other writing major requirements may apply to the honors program. Applications are submitted early in spring quarter of junior year. Over fall and winter of the senior year, admitted students enroll in ENGLISH 399-0 Independent Study and work one on one with a faculty mentor to complete a significant writing, creative media, or literary translation work (ENGLISH 399-0 does not count toward requirements for the major). Students whose projects and grades meet department criteria are recommended to the college for graduation with honors. For more information see the director of creative writing or a creative writing adviser, visit the department website, and see Honors in the Major (p. 222).

## Creative Writing Sequence-Based Minor

Students may apply to sequence-based minor in creative writing. Admission to the sequence-based minor in creative writing is competitive,

based on a manuscript of creative work from ENGLISH 206-0 Reading & Writing Poetry, ENGLISH 207-0 Reading and Writing Fiction, or ENGLISH 208-0 Reading & Writing Creative Non-Fiction. The minor offers an apprenticeship in the writing of poetry, fiction, and creative nonfiction, with a literature component.

The department accepts applications to the sequence-based minor in creative writing early each spring. First-year students may not apply.

Course	Title
<b>Requirements: Sequence-based Minor in Creative Writing (8 units)</b>	
<i>3 introductory courses:</i>	
ENGLISH 206-0	Reading & Writing Poetry
ENGLISH 207-0	Reading and Writing Fiction
ENGLISH 208-0	Reading & Writing Creative Non-Fiction
<i>1 yearlong theory and practice sequence:</i>	
ENGLISH 393-1 & ENGLISH 393-2 & ENGLISH 393-3	Theory and Practice of Poetry and Theory and Practice of Poetry and Theory and Practice of Poetry
or ENGLISH 394-1 & ENGLISH 394-2 & ENGLISH 394-3	Theory & Practice of Fiction and Theory & Practice of Fiction and Theory & Practice of Fiction
or ENGLISH 395-1 & ENGLISH 395-2 & ENGLISH 395-3	Theory and Practice of Creative Nonfiction and Theory and Practice of Creative Nonfiction and Theory and Practice of Creative Nonfiction
<i>2 300-level English-department literature courses:</i>	
1 on works written before 1830	
1 on works written after 1830	

## Creative Writing Cross-Genre Minor

Course	Title
<b>Requirements: Cross-genre Minor in Creative Writing (7 units)</b>	
<i>Three introductory courses:</i>	
ENGLISH 206-0	Reading & Writing Poetry
ENGLISH 207-0	Reading and Writing Fiction
ENGLISH 208-0	Reading & Writing Creative Non-Fiction
<i>Any two 300-level courses chosen from:</i>	
ENGLISH 306-0	Advanced Poetry Writing
ENGLISH 307-0	Advanced Fiction Writing
ENGLISH 308-0	Advanced Creative Nonfiction Writing
ENGLISH 309-0	Advanced Creative Cross-Genre Writing
<i>Two 300-level English-department literature courses:</i>	
One on works written before 1830	
One on works written after 1830	

## Environmental Policy and Culture

epc.northwestern.edu

The Environmental Policy and Culture Program offers students an interdisciplinary approach to environmental studies, focusing on the social sciences and humanities. Environmental issues and conflicts are among the most important concerns of the 21st century. The adjunct major and minor in Environmental Policy and Culture provide opportunities to engage in scholarly inquiry about managing the natural environment. Courses address issues such as global climate change, efforts to maintain and restore biodiversity, and the reconciliation of development with environmental protection. Courses that fulfill EPC requirements include both those offered by EPC (identified as ENVR\_POL) and courses from different departments and programs. Environmental

Policy and Culture students take at least 1 relevant course in the natural sciences but the emphasis is on courses in the humanities and social sciences.

## Programs of Study

- Environmental Policy and Culture Adjunct Major (p. 300)
- Environmental Policy and Culture Minor (p. 302)

**ENVR\_POL 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ENVR\_POL 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ENVR\_POL 211-0 Food and Society: An Introduction (1 Unit)** Overview of past and present food systems from a sociological perspective, examining the roles of culture, government policy, and social movements in shaping such systems and future alternatives. ENVR\_POL 211-0 and SOCIOLOGY 211-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

**ENVR\_POL 212-0 Environment and Society (1 Unit)** Key environmental problems, such as climate change and oil spills; how they are shaped by the market, government regulations, and social movements; possible solutions. SOCIOLOGY 212-0 and ENVR\_POL 212-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines U.S. Perspectives on Power, Justice, and Equity*

**ENVR\_POL 251-0 The Politics of Disaster: A Global Environmental History (1 Unit)** A global survey of natural disasters over the last several centuries. Key themes include: inequality, social vulnerability, environmental racism, historical memory and forgetting, and preventability. Using disaster history to better understand and meet the present and future challenges of global climate change. HISTORY 251-0 and ENVR\_POL 251-0 are taught together; students may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Historical Studies Foundational Discipline Social and Behavioral Science Foundational Disciplines*

**ENVR\_POL 309-0 American Environmental History (1 Unit)** American history from precontact to the present, focusing on the role of the natural world in human history and the role of human thought and action in natural history. ENVR\_POL 309-0 and HISTORY 309-0 are taught together; may not receive credit for both courses. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**ENVR\_POL 311-0 Food, Politics and Society (1 Unit)** Social groups, institutions, and policies shaping food production, distribution, and consumption around the world; their social and environmental consequences. Alternatives to existing food systems. SOCIOLOGY 311-0 and ENVR\_POL 311-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**ENVR\_POL 336-0 The Climate Crisis, Policies, and Society (1 Unit)** Examination of main impacts of climate change and of different perspectives toward mitigation and adaptation: market-based, institutionalist, bio-environmentalist, social movement, and climate

justice. SOCIOl 336-0 and ENVR\_POL 336-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**ENVR\_POL 337-0 Hazard, Disaster and Society (1 Unit)** This course examines how socioeconomic and environmental factors work together to cause hazards and disasters in human society. In this course, we learn the main concepts about disasters, such as preparedness, vulnerability, resilience, response, mitigation, etc. We learn that a disaster does not have the same effect on everyone, and factors of social inequality such as race, ethnicity, class, and gender make people more vulnerable to the impacts of disasters. ENVR\_POL 337-0 and GBL\_HLTH 337-0 are taught together; students may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ENVR\_POL 338-0 Environmental Justice (1 Unit)** This course examines how environmental problems reflect and exacerbate social inequality. In this course, we learn the definition of environmental (in)justice, the history of environmental justice and discuss examples of environmental justice. We will learn about environmental movements and local resistance to protect natural resources. ENVR\_POL 338-0 and GBL\_HLTH 338-0 are taught together; students may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ENVR\_POL 339-0 Silent but Loud: Negotiating Health in a Cultural, Food, Poverty, Environ. Caste (1 Unit)** This course will explore (un)health as a language is connected to certain bodies. Students will analyze the origins of bio-measurements used to justify "Othering" (not fitting within the norms of a dominant social group) and learn to formulate counternarratives to dominant ideological language that silently forms stereotypes, controlling images, hypervisibility, and invisibility that echo loudly as contributing to health inequities. GBL\_HLTH 339-0 and ENVR\_POL 339-0 are taught together; may not receive credit for both. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**ENVR\_POL 340-0 Global Environments and World History (1 Unit)** The planet's life support systems are at risk. This introductory course explores the recent histories of big environmental problems around the world, including industrialization, toxic contaminants, climate change, extractive economies, intercontinental warfare, and energy regimes. ENVR\_POL 340-0 and HISTORY 376-0 are taught together; may not receive credit for both courses. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ENVR\_POL 360-0 Animal Law (1 Unit)** Survey of laws, regulations, and cultural norms regarding nonhuman animals and animal ownership in the United States. History of animal protection movement, wildlife regulation, hunting and fishing rights, livestock care and slaughter, animal experimentation, anti-cruelty legislation, and companion animal law. ENVR\_POL 360-0 and LEGAL\_ST 360-0 are taught together; may not receive credit for both courses. Prerequisite: LEGAL\_ST 206-0 or POLI\_SCI 230-0, or instructor approval. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**ENVR\_POL 383-0 Environmental Anthropology (1 Unit)**

How humans have changed and are changing the environment and what can be done to halt environmental deterioration. Topics include population trends, food supplies, consumerism, environmental regulation, and ecological consciousness.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **ENVR\_POL 384-0 Political Ecology (1 Unit)**

Introduction to a multidisciplinary body of theory and research that analyzes the environmental articulations of political, economic, and social difference and inequality. Topics include environmental scarcity and degradation, sustainability, resilience and conservation. ANTHRO 382-0 and ENVR\_POL 384-0 taught together, may not receive credit for both.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

#### **ENVR\_POL 385-0 Archaeologies of Sustainability and Collapse (1 Unit)**

Archaeological survey of case studies from the past to interrogate human-environment relationships across time and space, including the present and the future. ANTHRO 326-0 and ENVR\_POL 385-0 taught together, may not receive credit for both.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **ENVR\_POL 390-0 Special Topics in Environmental Policy and Culture (1 Unit)**

Lecture course on environmental issues of current interest to students and faculty. May be repeated for credit with different topic.

#### **ENVR\_POL 395-0 Special Topics Seminar (1 Unit)**

Seminar on current environmental issues and problems. Topics vary. May be repeated for credit with different topic.

**ENVR\_POL 399-0 Independent Study (1 Unit)** Independent project in student's area of interest. Readings and conferences. Comprehensive term paper required. Prerequisite: consent of program director.

## **Environmental Policy and Culture Adjunct Major**

The adjunct major in Environmental Policy and Culture provides an intellectual home for those students interested in studying environmental questions from the perspective of the social sciences and humanities.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## **EPC adjunct major requirements (11 units)**

- 4 Core Courses (p. 301)
- 1 Ethics Course (p. 301)
- 1 Methods Course (p. 301)
- 2 Natural Science (p. 301) courses, both selected from one of the following four categories (or alternative pair approved by the DUS):
  - Diversity and Evolution
  - Ecology and Conservation
  - Earth Systems and Planetary Change
  - Sustainability
- Field Experience (p. 301) requirement (may or may not have an academic credit component)
- 3 Elective Course units (any combination from the Electives list (p. 301), additional Core Courses (p. 301), additional Ethics

Courses (p. 301), or academic credit associated with the Field Experience (p. 301) requirement)

Lists of courses that fulfill described requirements can be found below. Check website for quarterly updates about additional options.

### **Core Course List (students in the EPC adjunct major choose 4):**

Course	Title
ENVR_POL 211-0 or SOCIOI 211-0	Food and Society: An Introduction
ENVR_POL 212-0 or SOCIOI 212-0	Food and Society: An Introduction
ENVR_POL 212-0 or SOCIOI 212-0	Environment and Society
ENVR_POL 251-0 or HISTORY 251-0	The Politics of Disaster: A Global Environmental History
ENVR_POL 309-0 or HISTORY 309-0	American Environmental History
ENVR_POL 337-0 or GBL_HLTH 337-0	Hazard, Disaster and Society
ENVR_POL 340-0 or HISTORY 376-0	Global Environments and World History
ENVR_POL 360-0 or LEGAL_ST 360-0	Animal Law
ENVR_POL 383-0 or ANTHRO 383-0	Environmental Anthropology
ENVR_POL 384-0 or ANTHRO 382-0	Political Ecology
ENVR_POL 385-0 or ANTHRO 326-0	Archaeologies of Sustainability and Collapse

### **Elective Course List (students in the EPC adjunct major complete a total of 3 elective units):**

This is a sample of courses offered for credit as electives. See the EPC website (<https://epc.northwestern.edu/courses/>) for further offerings each term.

Course	Title
ENVR_POL 390-0	Special Topics in Environmental Policy and Culture
CIV_ENV 303-0	Environmental Law and Policy
CIV_ENV 309-0	Climate and Energy - Law and Policy
COMM_ST 383-0	Media, Communication, and Environment
ENGLISH 283-0	Introduction to Literature and the Environment
ENGLISH 284-0	Topics in Literature and the Environment

### **Ethics Course List (students in the EPC adjunct major choose 1):**

Course	Title
CIV_ENV 308-0	Environmental Justice
ENVR_POL 338-0 or GBL_HLTH 338-0	Environmental Justice
PHIL 268-0	Ethics and the Environment
PHIL 275-0 or ISEN 230-0	Climate Change and Sustainability: Ethical Dimensions

### **Methods Course List (students in the EPC adjunct major choose 1):**

Course	Title
ANTHRO 324-0	Archaeological Survey Methods
ANTHRO 389-0	Ethnographic Methods and Analysis
COMP_LIT 200-0	Introduction to Literary Theory
EARTH 360-0	Instrumentation and Field Methods
ENGLISH 300-0	Seminar in Reading and Interpretation
POLI_SCI 210-0	Introduction to Empirical Methods in Political Science
POLI_SCI 211-0	Introduction to Interpretive Methods in Political Science
POLI_SCI 312-0	Statistical Research Methods
SOCIOI 303-0	Analysis and Interpretation of Social Data
SOCIOI 329-0	Field Research and Methods of Data Collection
STAT 202-0	Introduction to Statistics and Data Science
STAT 210-0	Introduction to Probability and Statistics

### **Natural Science Course Lists (students in the EPC adjunct major choose 2 from one of the following lists):**

#### **Diversity and Evolution**

Course	Title
BIOI_SCI 103-0	Diversity of Life
BIOI_SCI 336-0	Spring Flora
BIOI_SCI 342-0	Evolutionary Processes
BIOI_SCI 350-0	Plant Evolution and Diversity Lab

#### **Ecology and Conservation**

Course	Title
BIOI_SCI 109-0	The Nature of Plants
BIOI_SCI 333-0	Plant-Animal Interactions
BIOI_SCI 339-0	Critical Topics in Ecology and Conservation
BIOI_SCI 347-0	Conservation Biology
BIOI_SCI 349-0	Community & Population Ecology

#### **Earth Systems and Planetary Change**

Course	Title
EARTH 105-0	Climate Catastrophes in Earth History
EARTH 106-0	The Ocean, the Atmosphere & Our Climate
EARTH 201-0	Earth Systems Revealed
EARTH 203-0	Earth System History
ENVR_SCI 201-0	Earth: A Habitable Planet
ENVR_SCI 202-0	The Health of the Biosphere

#### **Sustainability**

Course	Title
CIV_ENV 203-0	Earth in the Anthropocene
CIV_ENV 368-0	Sustainability: The City
ENVR_SCI 203-0	Humans and the Environment
ISEN 210-0	Introduction to Sustainability: Challenges and Solutions
ISEN 220-0	Introduction to Energy Systems for the 21st Century

### **Field Experience for the EPC adjunct major - projects as approved by the program. Examples listed here.**

- ENVR\_POL 399-0 Independent Study.
- Northwestern University grant-supported relevant research projects (URAP, AYURG, SURG)
- Relevant Study Abroad field courses/experiences.

- Relevant Chicago Field Studies internships such as CFS 387-0 Field Studies in the Environment & Sustainability
- Relevant Engage Chicago Summer Field Study; CFS 397-0 Field Studies in Civic Engagement

Academic units of credit earned in the process of completing a field experience, if posted to the Northwestern University transcript, may be directed to the elective course requirement.

## Environmental Policy and Culture Minor

Students doing the minor in environmental policy and culture may choose to concentrate in the humanities or social sciences or to take courses in both areas. Lists of Core, Natural Science, and Elective Courses can be found in the section of this Catalog describing the EPC adjunct major (p. 300). A quarterly list of additional courses counting toward the minor is available from the program office and the EPC website (<https://epc.northwestern.edu/courses/>). Course exceptions must be approved by the program director.

### EPC minor requirements (7 units)

- 3 Core Courses (for a course list see EPC major (p. 300))
- 1 Natural Science course (students may choose any one course from the natural science lists for the EPC major (p. 300))
- 3 Elective Courses
  - Electives may include no more than 1 quarter of Independent Study (ENVR\_POL 399-0)
  - Electives may include additional Core Courses beyond the three required
  - Electives may include courses from the Elective list or Ethics list for the EPC major (p. 300)
  - Electives may include an additional Natural Science course, but no more than two of the courses for the minor may be from the natural sciences

At least 4 of the 7 units must be at the 300-level.

## Environmental Sciences

[envsci.northwestern.edu](http://envsci.northwestern.edu)

The environmental sciences program prepares students to address one of society's greatest challenges: preservation and stewardship of the natural world.

The curriculum synthesizes the natural sciences, engineering, and the social sciences, all of which are important for understanding the environment, the impact human activities have on it, and ways to mitigate and manage such impacts. In the interdisciplinary curriculum, majors learn integrative and quantitative approaches to local and global environmental issues, such as climate change, energy, air and water pollution, biodiversity, human health, and sustainability. The program provides preparation for employment in environmentally oriented firms, companies, and organizations; training for graduate study in diverse environmental disciplines; and pre-professional development for careers in civil service, law, business, and medicine.

## Programs of Study

- Environmental Sciences Major (p. 302)
- Environmental Sciences Second Major for ISP Students (p. 305)

**ENVR\_SCI 201-0 Earth: A Habitable Planet (1 Unit)** Overview of the physical processes governing environmental systems, from lithosphere to hydrosphere to atmosphere. Physical science perspectives on current debates, such as those over water resources, energy, and climate change. *Natural Sciences Distro Area*

**ENVR\_SCI 202-0 The Health of the Biosphere (1 Unit)** Dimensions of the ecological niche; growth and regulation of populations; interactions among populations; community structure and diversity; conservation. Prerequisite: CHEM 152-0 or equivalent. *Natural Sciences Distro Area*

**ENVR\_SCI 203-0 Humans and the Environment (1 Unit)** Introduction to human interactions with the environment. Topics may include but are not limited to energy, sustainability, pollution, and climate change. *Natural Sciences Distro Area*

**ENVR\_SCI 390-0 Special Topics in Environmental Sciences (1 Unit)** Lecture course on environmental science topics of interest to students and faculty. May be repeated for credit with different topic.

**ENVR\_SCI 399-0 Independent Study (1 Unit)** Independent research on special problems under direct supervision of a faculty adviser. Comprehensive report required. Prerequisite: consent of program director.

## Environmental Sciences Major

The major in Environmental Sciences has two tracks: one in science (Science Track) and one in economic policy (Policy Track). The tracks share foundation courses in science and math, and the core curriculum. Advanced coursework differs by track.

Students plan their academic paths with an environmental sciences adviser. Many foundation courses are prerequisites for advanced courses and should be completed as soon as possible. Students envisioning graduate training in Environmental Sciences are specifically encouraged to take additional math and the full sequence of either General Physics or 200 level Biological Sciences. Students interested in environmental health and medical professions are advised to take the full 200-level sequence in biological sciences and two additional quarters of organic chemistry.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Major Requirements: Program Courses (11 units)

### 3 Core Environmental Science Courses at the 200-Level

Course	Title
ENVR_SCI 201-0	Earth: A Habitable Planet
ENVR_SCI 202-0	The Health of the Biosphere
ENVR_SCI 203-0	Humans and the Environment

## 8 Advanced Studies Courses

Advanced studies courses differ by the chosen track. In both the science track and the policy track at least 6 of the required 8 advanced studies courses must be at the 300-level. See the Advanced Studies Course Lists (p. 303) below for lists of approved courses. See the Environmental Sciences webpage (<https://www.envsci.northwestern.edu/undergraduate-program/major-requirements.html>) for updates to these lists. Students who double-major in economics and environmental sciences are encouraged to do the science track in environmental sciences, and must take extra 300-level economics classes to fulfill the requirements for both majors.

### Science Track Advanced Studies Course Requirements

- 6 courses from the Science List (p. 303). Up to 2 of these may be replaced with ENVR\_SCI 399-0 research courses.
- 2 courses from the Environment and Society List (p. 304).

### Policy Track Advanced Studies Course Requirements

- 4 courses from the Science List (p. 303).
- 2 required economics courses: ECON 281-0 and ECON 310-1.
- 1 additional economics course chosen from: ECON 371-0, ECON 372-0, or ECON 373-0.
- 1 course selected from either the Science List (p. 303) or the Environment and Society List (p. 304).

## Major Requirements: Foundations in Science and Math (9.68-12.38 units)

### Required Math and Chemistry Courses

Students should complete all of the following math and chemistry courses in their first two years. Total units depend on math sequence taken. Courses may double-count with another major or minor.

Course	Title
MATH 220-1	Single-Variable Differential Calculus
or MATH 218-1 & MATH 218-2	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 220-2	Single-Variable Integral Calculus
or MATH 218-3	Single-Variable Calculus with Precalculus
CHEM 131-0 & CHEM 141-0 & CHEM 132-0 & CHEM 142-0	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I and Fundamentals of Chemistry II and Fundamentals of Chemistry Laboratory II (Pre-requisite: CHEM 110-0)
or CHEM 151-0 & CHEM 161-0 & CHEM 152-0 & CHEM 162-0	General Chemistry I and General Chemistry Laboratory I and General Chemistry II and General Chemistry Laboratory II
or CHEM 171-0 & CHEM 181-0 & CHEM 172-0 & CHEM 182-0	Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory and Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory

### 5 Additional Related Math and Science Courses

Students must take 5 courses (and their associated lab, if applicable) from the following options, with at least 2 from the same group. Required labs do not count toward the 5-course total.

Course	Title
BIOl_SCI 201-0	Molecular Biology
BIOl_SCI 202-0 & BIOl_SCI 232-0	Cell Biology and Molecular and Cellular Processes Laboratory
BIOl_SCI 203-0 & BIOl_SCI 233-0	Genetics and Evolution and Genetics and Molecular Processes Laboratory
CHEM 215-1 & CHEM 235-1	Organic Chemistry I and Organic Chemistry Lab I
CHEM 215-2 & CHEM 235-2	Organic Chemistry II and Organic Chemistry Lab II
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics
GEN_ENG 205-1	Engineering Analysis I
MATH 226-0	Sequences and Series
MATH 230-1	Multivariable Differential Calculus
MATH 230-2	Multivariable Integral Calculus
MATH 235-0	Series and Multiple Integrals
MATH 240-0	Linear Algebra (Pre-requisite: MATH 230-1)
MATH 250-0	Elementary Differential Equations (Pre-requisites: MATH 226-0, MATH 230-2 and MATH 240-0)
PHYSICS 135-1 & PHYSICS 136-1	General Physics and General Physics Laboratory
PHYSICS 135-2 & PHYSICS 136-2	General Physics and General Physics Laboratory
PHYSICS 135-3 & PHYSICS 136-3	General Physics and General Physics Laboratory
STAT 202-0 or STAT 210-0	Introduction to Statistics and Data Science Introduction to Probability and Statistics

## Advanced Studies Course Lists

Approved courses for the advanced studies course requirements (p. 303) may be selected from the below Science List (p. 303) and Environment and Society List (p. 304), dependent on track requirements outlined above. Check program webpage for dynamic list of pre-approved courses.

### Science List

Course	Title
ANTHRO 306-0	Evolution of Life Histories
ANTHRO 312-0	Human Population Biology
ANTHRO 359-0	The Human Microbiome and Health
BIOl_SCI 301-0	Principles of Biochemistry
BIOl_SCI 328-0	Microbiology
BIOl_SCI 332-0	Conservation Genetics
BIOl_SCI 333-0	Plant-Animal Interactions <sup>2</sup>
BIOl_SCI 336-0	Spring Flora
BIOl_SCI 337-0	Biostatistics
BIOl_SCI 338-0	Modeling Biological Dynamics
BIOl_SCI 339-0	Critical Topics in Ecology and Conservation
BIOl_SCI 341-0	Population Genetics
BIOl_SCI 342-0	Evolutionary Processes
BIOl_SCI 346-0	Field Ecology
BIOl_SCI 347-0	Conservation Biology
BIOl_SCI 349-0	Community & Population Ecology
BIOl_SCI 350-0	Plant Evolution and Diversity Lab
CHEM 306-0	Environmental Chemistry
CHEM 342-1	Thermodynamics
CHEM 342-2	Quantum Mechanics and Spectroscopy

CHEM 393-0	Green Chemistry
CHEM_ENG 321-0	Fluid Mechanics
CHEM_ENG 345-0	Process Optimization for Energy and Sustainability
CHEM_ENG 365-0	Sustainability, Technology, and Society
CHEM_ENG 367-0	Quantitative Methods in Life Cycle Analysis
CIV_ENV 260-0	Environmental Systems and Processes
CIV_ENV 295-0	Introductory topics in Civil and Environmental Engineering <sup>1</sup>
CIV_ENV 340-0	Hydraulics and Hydrology
CIV_ENV 346-0	Ecohydrology
CIV_ENV 361-1	Environmental Microbiology
CIV_ENV 361-2	Public & Environmental Health
CIV_ENV 364-0	Sustainable Water Systems
CIV_ENV 365-0	Environmental Laboratory
CIV_ENV 367-0	Chemical Processes in Aquatic Systems
CIV_ENV 368-0	Sustainability: The City
CIV_ENV 370-0	Emerging Organic Contaminants
CIV_ENV 371-0	Introduction to Transportation Planning and Analysis
CIV_ENV 376-0	Transportation System Operations
CIV_ENV 387-0	Design of Sustainable Urban Developments
EARTH 201-0	Earth Systems Revealed
EARTH 202-0	Earth's Interior
EARTH 300-0	Earth and Planetary Materials
EARTH 301-0	Petrology: Evolution of Crustal and Mantle Rocks
EARTH 310-0	Aqueous Geochemistry
EARTH 312-0	Stable Isotope Geochemistry
EARTH 313-0	Radiogenic Isotope Geochemistry
EARTH 314-0	Organic Geochemistry
EARTH 330-0	Sedimentary Geology
EARTH 340-0	Physics of Weather & Climate
EARTH 341-0	Quaternary Climate Change: Ice Ages to the Age of Oil
EARTH 342-0	Contemporary Energy and Climate Change
EARTH 343-0	Earth System Modeling
EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences
EARTH 360-0	Instrumentation and Field Methods
EARTH 361-0	Scientific Programming in Python
EARTH 370-0	Geobiology
EARTH 371-0	Biogeochemistry
EARTH 373-0	Microbial Ecology
EARTH 390-0	Special Topics in Earth and Planetary Science <sup>1</sup>
ENVR_SCI 390-0	Special Topics in Environmental Sciences
ENVR_SCI 399-0	Independent Study
ISEN 210-0	Introduction to Sustainability: Challenges and Solutions
ISEN 220-0	Introduction to Energy Systems for the 21st Century
MECH_ENG 241-0	Fluid Mechanics I
MECH_ENG 367-0	Quantitative Methods in Life Cycle Analysis
MECH_ENG 380-0	Thermal Energy Systems Design
MECH_ENG 395-0	Special Topics in Mechanical Engineering <sup>1</sup>

<sup>1</sup> Approved sections only.<sup>2</sup> Take as ENVR\_SCI 390-0

## Environment and Society List

Course	Title
ANTHRO 383-0	Environmental Anthropology
CIV_ENV 303-0	Environmental Law and Policy
CIV_ENV 368-0	Sustainability: The City
CIV_ENV 395-0	Special Topics in Civil and Environmental Engrg <sup>1</sup>
ECON 281-0	Introduction to Applied Econometrics
ECON 310-1	Microeconomics
ECON 372-0	Environmental Economics
ECON 373-0	Natural Resource Economics
ENVR_POL 211-0	Food and Society: An Introduction
ENVR_POL 212-0	Environment and Society
ENVR_POL 309-0	American Environmental History
ENVR_POL 336-0	The Climate Crisis, Policies, and Society
ENVR_POL 337-0	Hazard, Disaster and Society
ENVR_POL 338-0	Environmental Justice
ENVR_POL 340-0	Global Environments and World History
ENVR_POL 383-0	Environmental Anthropology
ENVR_POL 384-0	Political Ecology
ENVR_POL 390-0	Special Topics in Environmental Policy and Culture
ENVR_POL 395-0	Special Topics Seminar <sup>1</sup>
GBL_HLTH 201-0	Introduction to Global Health
GBL_HLTH 302-0	Global Bioethics
GBL_HLTH 325-0	History of Reproductive Health
GBL_HLTH 390-0	Special Topics in Global Health
HISTORY 200-0	New Introductory Courses in History <sup>1</sup>
HISTORY 251-0	The Politics of Disaster: A Global Environmental History
HISTORY 300-0	New Lectures in History <sup>1</sup>
HISTORY 309-0	American Environmental History
HISTORY 376-0	Global Environments and World History
INTL_ST 393-0	Development in the Global Context: Participation, Power, and Social Change
ISEN 230-0	Climate Change and Sustainability: Ethical Dimensions
ISEN 390-0	Special Topics in Energy and Sustainability
PHIL 254-0	Introduction to Philosophy of the Natural Sciences
PHIL 262-0	Ethical Problems and Public Issues
PHIL 268-0	Ethics and the Environment
PHIL 269-0	Bioethics
PHIL 275-0	Climate Change and Sustainability: Ethical Dimensions
POLI_SCI 329-0	U.S. Environmental Politics
POLI_SCI 349-0	International Environmental Politics
SOCIAL 212-0	Environment and Society
SOCIAL 276-0	Introductory Topics in Sociology <sup>1</sup>
SOCIAL 301-0	The City: Urbanization and Urbanism
SOCIAL 305-0	Population Dynamics

<sup>1</sup> Approved sections only.

## Honors in Environmental Sciences

Students with strong academic records and an interest in pursuing honors should approach a faculty member by the end of junior year to discuss possible projects; these may involve field, experimental, or computational research. Research is completed during a minimum 2 quarters of ENVR\_SCI 399-0 Independent Study with their faculty

research mentor, which may count toward major requirements. Students then prepare a written thesis. Those whose theses and grades meet program criteria are recommended to the college by their faculty mentor for graduation with honors. For more information consult the program director and see Honors in the Major (p. 222).

## Environmental Sciences Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

The Integrated Science Program is a highly selective BA program in Weinberg College (see Integrated Science Program (p. 345)). Students majoring in ISP who wish to complete a second major in environmental sciences should fulfill the following requirements instead of those listed for the stand-alone Environmental Sciences major (p. 302).

Course	Title
ENVR_SCI 201-0	Earth: A Habitable Planet
ENVR_SCI 202-0	The Health of the Biosphere
ENVR_SCI 203-0	Humans and the Environment
4 advanced studies courses from the lists of approved courses on the stand-alone major page:	
3 from the science list <sup>1</sup>	
1 from the environment and society list	
All must be at the 300 level.	

<sup>1</sup> May substitute 1 quarter of ENVR\_SCI 399-0 Independent Study for 1 of these.

## Ethical and Evaluative Thinking

Ethical and Evaluative Thinking (FD-EET) is one of the six Foundational Disciplines that are part of the WCAS bachelor's degree.

All human cultures have produced systems of thought and belief concerning ways of being in the world and relating to one another. Courses in this foundational area equip students to engage these systems and wrestle with central human questions. Courses explicitly consider questions concerning values or teach students to think within, appreciate the resources of, and critically reflect upon a particular tradition of thought. Completing this foundational area will help students recognize and reflect on ethical and evaluative questions, become aware of what standards they bring to bear in answering them, appreciate and respect their own and other cultural systems, and work through disagreements with others.

## Learning Objectives for FD-EET

Course in Ethics and Evaluative Thinking are designed to foster the intellectual autonomy students will need to thrive as thinkers and agents in an increasingly complex world, by achieving a combination of the following learning outcomes:

- Attain the conceptual tools needed to recognize and understand prescriptive issues, questions, and claims, and to distinguish them from descriptive issues, questions and claims
- Identify the values presupposed by an outlook or discourse
- Recognize the complexity of many ethical issues and consider a variety of alternative resolutions and the reasons for holding them
- Appreciate the insights available in one or more intellectual or cultural traditions
- Reflect upon one's own answers to evaluative questions, the presuppositions informing them, and the reasons for supporting them
- Engage in respectful, rigorous and constructive dialogue concerning evaluative issues and communicate thoughtfully and clearly about them

## FD-EET Courses

Courses approved for the 2024-2025 academic year.

Course	Title
ANTHRO 232-0	Myth and Symbolism
ASIAN_LC 373-0	Religious and Textual Traditions in South Asia
CLASSICS 370-0	Greek and Roman Religion
COMP_LIT 207-0	Introduction to Critical Theory
COMP_SCI 260-0	Introduction to Law and Digital Technologies
ENGLISH 220-0	The Bible as Literature
ENGLISH 288-0	Topics in Literature and Ethics
ENGLISH 388-0	Studies in Literature and Ethics
FRENCH 277-0	French Existentialism
GBL_HLTH 302-0	Global Bioethics
GBL_HLTH 324-0	Volunteerism and the Ethics of Help
GERMAN 232-0	The Theme of Faust Through the Ages
GERMAN 234-1	Jews and Germans: An Intercultural History I
GERMAN 236-0	Kafka and Nietzsche
GERMAN 272-0	Luther and the West
GNDR_ST 233-0	Gender, Politics, and Philosophy
GNDR_ST 260-0	Critical Fat Studies
HISTORY 253-0	A Global History of Prisons and Camps
HISTORY 261-0	Sex after Shakespeare
HISTORY 351-0	Europe in the Age of Total War
HISTORY 352-0	A Global History of Death and Dying
HUM 212-0	Humanities in the World III
HUM 325-5	Humanities in the Digital Age
HUM 370-5	Special Topics in the Humanities
ISEN 230-0	Climate Change and Sustainability: Ethical Dimensions
ISEN 375-0	Issues in Environmental Philosophy
LEGAL_ST 308-0	Sociology of Law
LEGAL_ST 309-0	Political Theories of the Rule of Law
LEGAL_ST 350-0	Psychology and the Law
MENA 290-5	Introductory Topics in Middle East and North African Studies
MENA 390-5	Advanced Topics in Middle East & North African Studies
PHIL 110-0	Introduction to Philosophy
PHIL 210-1	History of Philosophy - Ancient
PHIL 210-3	History of Philosophy - Early Modern
PHIL 216-0	Introduction to Pragmatism
PHIL 219-0	Introduction to Existentialism

PHIL 220-0	Introduction to Critical Theory	RELIGION 371-0	Religion, TV, and Film
PHIL 221-0	Gender, Politics, & Philosophy	RELIGION 373-0	Religion and Bioethics
PHIL 222-0	Introduction to Africana Philosophy	RELIGION 374-0	Contemporary Religious Thought
PHIL 224-0	Philosophy, Race, and Racism	RELIGION 377-0	Christian Thought in Global Perspective
PHIL 240-0	Freedom and Responsibility	RELIGION 382-0	Religion, Law, & Politics: Politics of Religious Diversity
PHIL 254-0	Introduction to Philosophy of the Natural Sciences	SOCIAL 318-0	Sociology of Law
PHIL 255-0	Theory of Knowledge	SPANISH 349-0	Critical Thought in Latin Amer
PHIL 260-0	Introduction to Moral Philosophy		
PHIL 261-0	Introduction to Political Philosophy		
PHIL 262-0	Ethical Problems and Public Issues		
PHIL 266-0	Philosophy of Religion		
PHIL 268-0	Ethics and the Environment		
PHIL 269-0	Bioethics		
PHIL 273-1	The Brady Scholars Program: The Moral Life		
PHIL 273-2	The Brady Scholars Program: The Good Life		
PHIL 273-3	The Brady Scholars Program: The Good Society		
PHIL 275-0	Climate Change and Sustainability: Ethical Dimensions		
PHIL 326-0	Topics in Philosophy of Medicine		
PHIL 364-0	Business and Professional Ethics		
PHIL 375-0	Issues in Environmental Philosophy		
POLI_SCI 301-0	Classical Political Theory		
POLI_SCI 303-0	Modernity and Its Discontents		
POLI_SCI 304-0	Human Rights Between East and West		
POLI_SCI 307-0	Deportation Law and Politics		
POLI_SCI 309-0	Political Theories of the Rule of Law		
POLI_SCI 347-0	Ethics in International Relations		
POLI_SCI 382-0	Religion, Law, & Politics: Politics of Religious Diversity		
PSYCH 249-0	Buddhist Psychology		
PSYCH 340-0	Psychology and Law		
RELIGION 170-0	Introduction to the Study of Religion		
RELIGION 172-0	Introduction to Religion, Media, and Culture		
RELIGION 200-0	Introduction to Hinduism		
RELIGION 210-0	Introduction to Buddhism		
RELIGION 220-0	Introduction to Hebrew Bible		
RELIGION 221-0	Introduction to the New Testament		
RELIGION 230-0	Introduction to Judaism		
RELIGION 240-0	Introduction to Christianity		
RELIGION 250-0	Introduction to Islam		
RELIGION 270-0	Introduction to Theology		
RELIGION 271-0	Theology of Love		
RELIGION 272-0	Luther and the West		
RELIGION 295-0	Ahimsa: Nonviolence in South Asia and Beyond		
RELIGION 308-0	Indian Philosophy		
RELIGION 309-0	Topics in Hinduism		
RELIGION 312-0	Buddhism and Gender		
RELIGION 314-0	Buddhism in the Contemporary World		
RELIGION 316-0	Religion and the Body in China		
RELIGION 318-0	Topics in East Asian Religions		
RELIGION 319-0	Topics in Buddhism		
RELIGION 329-0	Topics in the Bible		
RELIGION 345-0	Idea of Sainthood in Christianity		
RELIGION 349-0	Topics in Christianity		
RELIGION 351-0	Islamic Law		
RELIGION 354-0	Sufism		
RELIGION 360-0	Black Religions		
RELIGION 369-0	Topics in American Religion		

## Ethics and Civic Life

[bradyprogram.northwestern.edu](http://bradyprogram.northwestern.edu)

The interdisciplinary Brady Scholars Program in Ethics and Civic Life provides students with the opportunity to examine and practice the ethics of citizenship and leadership. The three-year program includes academic, international, and service components. Brady Scholars are selected in the spring of the first year.

## Program of Study

- Brady Scholars Program (p. 306)

## Brady Scholars Program

As sophomores, Brady Scholars enroll each quarter in a philosophy seminar. In these we consider what we owe to others, what makes a good human life, and what makes a good society. We also learn about the local community of Evanston and the cohort selects one local community challenge for further study.

In their junior year, Brady Scholars go out into the world, participating in a study abroad program or in Northwestern's Engage Chicago program.

They experience another community and may have opportunity to learn how the challenge selected by their group is addressed there. In the winter quarter, the cohort gathers several times to discuss a literary work and reflect on its relevance for ideals of community. In the spring quarter, they begin advanced planning for the senior project.

Brady students work collectively in their senior year to address the challenge they have identified. Seniors receive 1 unit of academic credit for the pair of courses: PHIL 373-1, and PHIL 373-2.

## Courses

Specific topics in the sophomore-year seminars PHIL 273-1, PHIL 273-2, PHIL 273-3 will vary as different professors participate. The senior year community engagement sequence PHIL 373-1, PHIL 373-2 will relate to the community challenge.

## French and Italian

[frenchanditalian.northwestern.edu](http://frenchanditalian.northwestern.edu)

Studies in French and Italian provide unique insights into the language, thought, and character of cultures different from our own. Such knowledge builds an awareness of our own society's diversity and the ways it resembles and differs from others. Proficiency in language and knowledge of culture are keys to careers in communication, media, business, the arts, and academia and are valuable components of any university education.

The department's programs are varied. Language courses, from the elementary through the graduate levels, develop communication skills for functioning at ease with foreign texts or in a foreign environment.

Courses in literature and culture not only broaden and deepen insights into the thought and writing of other societies but also train students to think independently, to organize and analyze materials thoughtfully, and to discuss ideas effectively.

The department offers a minor in French, a major in French studies, MA and PhD programs in French, and a minor and a major in Italian. These may be supplemented by study abroad, which allows students to increase their knowledge of a foreign language and society while continuing university work abroad in a variety of fields. It is not necessary to be a major to participate in these programs.

## French Study Abroad

Students studying abroad in France or other francophone countries may receive up to 7 credits (depending on program length) if the content of courses taken abroad relates in a substantive way to some aspect of French or francophone culture or society.

## Programs of Study

- French Major (p. 311)
- French Minor (p. 313)
- Italian Literature and Culture Major (p. 313)
- Italian Minor (p. 314)
- French BA/MA (p. 314)

See below for Italian Courses (p. 310).

## French Courses

**FRENCH 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**FRENCH 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

### FRENCH 106-0 French for Research (0 Unit)

**FRENCH 111-1 Elementary French (1 Unit)** Conversation, grammar, reading, and writing for beginners. Four class meetings a week.

**FRENCH 111-2 Elementary French (1 Unit)** Conversation, grammar, reading, and writing for beginners. Four class meetings a week. Prerequisite: Grade of at least C- in FRENCH 111-1 or Department placement.

**FRENCH 111-3 Elementary French (1 Unit)** Conversation, grammar, reading, and writing for beginners. Four class meetings a week. Prerequisite: Grade of at least C- in FRENCH 111-2 or Department placement.

**FRENCH 115-1 Intensive Elementary French (1 Unit)** For students with some previous experience in French. Review and development of skills in speaking, understanding, reading, and writing as preparation for work at the second-year level. Four class meetings a week. Prerequisite: Department placement.

**FRENCH 115-2 Intensive Elementary French (1 Unit)** For students with some previous experience in French. Review and development of skills in speaking, understanding, reading, and writing as preparation for work at

the second-year level. Four class meetings a week. Prerequisite: Grade of at least C- in FRENCH 115-1 or Department placement.

**FRENCH 121-1 Intermediate French (1 Unit)** Grammar review, conversation, reading, and writing. Four class meetings a week. Prerequisite: Grade of at least C- in FRENCH 111-3 or Department placement.

**FRENCH 121-2 Intermediate French (1 Unit)** Grammar review, conversation, reading, and writing. Four class meetings a week. Prerequisite: Grade of at least C- in FRENCH 121-1 or Department placement.

**FRENCH 121-3 Intermediate French (1 Unit)** Grammar review, conversation, reading, and writing. Four class meetings a week. Prerequisite: Grade of at least C- in FRENCH 121-2 or Department placement.

**FRENCH 125-1 Intensive Intermediate French (1 Unit)** French language and culture: conversation, composition, reading of cultural and literary texts, and grammar review. Three class meetings a week. Prerequisite: Grade of at least C- in FRENCH 115-2 or Department placement.

**FRENCH 125-2 Intensive Intermediate French (1 Unit)** French language and culture: conversation, composition, reading of cultural and literary texts, and grammar review. Three class meetings a week. Prerequisite: Grade of at least C- in FRENCH 125-1 or Department placement.

**FRENCH 125-3 Intensive Intermediate French (1 Unit)** French language and culture: conversation, composition, reading of cultural and literary texts, and grammar review. Three class meetings a week. Prerequisite: Grade of at least C- in FRENCH 125-2 or Department placement.

**FRENCH 198-0 Independent Study (1 Unit)** Credit for 1 quarter only. Prerequisite: Department approval.

**FRENCH 199-SA Language and Culture (2 Units)** Grammar, conversation, reading, writing, and culture study. Restricted to students in Northwestern's Paris programs. Students completing this course must take a placement exam before continuing French at Northwestern.

**FRENCH 201-0 Culture and Society (1 Unit)** Development of fluency, accuracy, and creativity in speaking, comprehension, reading, and writing French; introduction to social, cultural, and literary topics. Prerequisite: Grade of at least C- in FRENCH 121-3 or Department placement.

**FRENCH 202-0 Writing Workshop: Cultural Encounters in Contemporary France (1 Unit)** Practical study of French grammar and structure; students develop and improve writing skills through practice in preparing short compositions. Prerequisite: FRENCH 125-3, FRENCH 201-0, or Department placement.

**FRENCH 203-0 Oral Workshop: Individual and Society in France Today (1 Unit)** Practical course to increase listening comprehension, build vocabulary and idiom use, and enhance communication skills. Prerequisite: FRENCH 125-3, FRENCH 201-0 or Department placement.

**FRENCH 204-0 Acting French (1 Unit)** Use of dramatic scenes, dialogues, songs and performance to help students improve their language skills and develop their interpretive, interpersonal and intercultural competence at the Intermediate Mid/High level. Prerequisite: FRENCH 121-3 or FRENCH 125-3 or FRENCH 201-0 or consent of instructor.

**FRENCH 210-0 Reading Literatures in French (1 Unit)** Introduction to texts in various genres such as essay, poetry, drama, novel, and autobiography, from at least two periods from the Middle Ages to the present. Prerequisite: FRENCH 202-0, AP score of 5, or consent of instructor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 211-0 Reading Cultures in French (1 Unit)** Introduction to French and/or francophone cultures through texts and media from at least two periods; major themes, issues, and debates. Prerequisite: FRENCH 202-0, AP score of 5, or consent of instructor. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 271-0 Introducing the Novel (1 Unit)** Textual interpretation and analysis of French novels from different periods, with special attention to formal issues. Prerequisite: FRENCH 210-0 or FRENCH 211-0, or consent of instructor. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 272-0 Introducing Theatre (1 Unit)** Textual interpretation and analysis of French plays from different periods, with special attention to formal issues. Principles of tragedy and comedy; contemporary developments. Prerequisite: FRENCH 210-0 or FRENCH 211-0, or consent of instructor. Credit not allowed for both FRENCH 272-0 and FRENCH 279-0. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 273-0 Introducing Poetry (1 Unit)** Textual interpretation and analysis of French poetry from different periods, with special attention to formal issues. Overview of major poetic movements. Prerequisite: FRENCH 210-0 or FRENCH 211-0, or consent of instructor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 277-0 French Existentialism (1 Unit)** Existentialism in its literary, philosophical, and cultural manifestations. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 279-0 Theater in Translation (1 Unit)** Representative French plays from the 17th through 20th centuries; basic concepts of genre; social and historical context. Credit not allowed for both FRENCH 279-0 and FRENCH 272-0. *Literature Fine Arts Distro Area*

**FRENCH 280-0 Major Topics in French and Francophone Studies (1 Unit)** An introduction to major themes or problems in the study of French and Francophone studies for a wide audience. Potential topics include: literary approaches to scientific language, representing the 19th century in film, the French novel in translation, laughing in French, etc. Taught in English. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 299-SA Language and Culture (2 Units)** Study of French language and culture in Paris. Restricted to students in Northwestern's Paris programs. Students completing this course must take a placement exam before continuing French at Northwestern. Prerequisite: Fulfillment of Weinberg College French language proficiency via AP Score of 5; French 121-3, 125-3 or 201; or validation of proficiency.

**FRENCH 300-0 French Phonetics (1 Unit)** Development of near-native spoken French through practice in correct pronunciation. Phonetic system of contemporary French; introduction to basic issues of theoretical phonetics. Prerequisite: FRENCH 202-0, FRENCH 203-0, or consent of instructor.

**FRENCH 301-0 Advanced Language in Context: Society and Popular Culture (1 Unit)** Practical study of structure, syntax, and usage of French through contemporary media, cinema, theater, and popular culture. Prerequisite: FRENCH 202-0 or consent of instructor.

**FRENCH 302-0 Advanced Writing: Finding Your Voice in French (1 Unit)** Development of written expression for different communicative needs and functions based on the study of French writing styles and techniques. Prerequisite: FRENCH 202-0 or consent of instructor.

**FRENCH 303-0 Advanced Conversation: Debating Contemporary France (1 Unit)** Development of advanced proficiency and confidence in spoken French through practice of speech and discussion of issues in current French media and culture. Emphasis on culturally appropriate usage. Prerequisite: FRENCH 202-0, FRENCH 203-0, or consent of instructor.

**FRENCH 309-0 French For Professions (1 Unit)** French language as used in professional contexts. May include study of a specific field and differences from its American counterpart. May be repeated for credit with change of topic. Prerequisite: FRENCH 202-0 or consent of instructor.

**FRENCH 310-0 The Middle Ages & Renaissance (1 Unit)** Study of literary texts of the French Middle Ages and Renaissance with emphasis on their historical and literary-historical contexts. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 322-0 Medieval French Narratives (1 Unit)** Major narrative works of the French Middle Ages in historical context. Content varies; may include epics such as the Song of Roland, romances such as Chrétien de Troyes's Perceval, and narratives of childhood. Texts read in modern French versions. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 333-0 Topics in Renaissance Literature (1 Unit)** Study of literary and other texts of the French Renaissance with emphasis on their literary, historical, and political contexts. May be repeated for credit with change of topic. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor.

**FRENCH 334-0 Montaigne and Modernity (1 Unit)** In-depth study of the work of Michel de Montaigne and his models within the context of Renaissance history, politics and philosophy. All readings and discussion in French. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 335-0 17th Century Literature (1 Unit)** Topics and issues related to the literature and culture of 17th century France. Content varies; topics covered previously include theater and its social and political contexts, the rise of rational thought, and the development of fiction and poetry. May be repeated for credit with change of topic. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 340-0 Sexual Politics and the Ancien Régime (1 Unit)** Literary, intellectual, and political role of women in view of the debates generated by the issues of women's power in the public sphere before the French Revolution. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 344-0 Rousseau and the French Revolution (1 Unit)** Analysis of Rousseau's political thought and major literary works and their impact on Revolutionary ideology and culture. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 346-0 Studies in the Enlightenment (1 Unit)** Authors such as Rousseau, Diderot, Montesquieu, Voltaire, and Graffigny in relation to Enlightenment debates about science, religion, political authority, human nature, colonialism, gender, and slavery. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 350-0 The Novel in French (1 Unit)** Content varies; may include the novel of the ancien régime, the psychological novel, and the Bildungsroman in France. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 355-0 Topics in Modern and Contemporary French Literature and Culture (1 Unit)** Transhistorical study of literary and other texts of the modern and contemporary periods (1800–present) with emphasis on their literary, historical, and political contexts. May be repeated for credit with change of topic. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 360-0 From Modernism to Postmodernism (1 Unit)** Crises and reinventions of French prose from the modernist moment of the early 20th century to the ambiguities of "engaged" literature of the 1930s to postmodernism. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 362-0 African Literatures and Cultures (1 Unit)** Major issues, trends, and authors from francophone Africa. Content varies; may include Shahrazade, narratives of gender relations, law and literature, violence, and writing. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Advanced Expression Literature and Arts Foundational Discipline*

**FRENCH 364-0 Caribbean Literatures and Cultures (1 Unit)** Major issues, trends, and authors from the francophone Caribbean and its diasporas. Content varies; may include Caribbean women writers; slavery, history, and memory; Caribbean identities. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 365-0 The Maghreb and the Middle East (1 Unit)** Major issues in the literatures and cultures of North Africa and the Middle East. Content varies. May include exile in writing; politics of language and translation. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 366-0 France and East Asia (1 Unit)** Interdisciplinary approaches to the history of French-East Asian relations, including French representations of East Asia. May include translation, japonisme, cinema, literary and philosophical avant-gardes, and culture and globalization. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor.

**FRENCH 367-0 Transnational Francophone Studies (1 Unit)** Exploration of cultural production in various genres from the French-speaking world, with an emphasis on themes, ideas, and/or forms that traverse national and/or cultural boundaries. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. May be repeated for credit when content changes. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 371-0 Giants, Cannibals, and Critique (1 Unit)** Analysis of works of Rabelais and Montaigne and their techniques of satire and social critique. Readings include related selections from Erasmus, More, La Boétie, and others. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 374-0 Proust (1 Unit)** Introduces the works of Marcel Proust, a central figure of European literature and thought. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 375-0 French Film (1 Unit)** Topics in French cinema: for example, French classical cinema, the New Wave, postcolonial French film, the cinema of Marguerite Duras. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 376-0 Gender & Sexuality (1 Unit)** Major trends and perspectives in gender and sexuality studies such as first and second wave feminisms, lesbian writers, AIDS literature, queer theory, gender and orientalism, cross-cultural feminism. *Literature Fine Arts Distro Area*

**FRENCH 378-0 Contemporary Theory (1 Unit)** Introduction to some major trends in contemporary French theory and the way they have influenced literary studies in the United States. *Literature Fine Arts Distro Area*

**FRENCH 379-0 Topics in French Literature and Culture (1 Unit)** Advanced exploration of special topics in French studies. May be repeated for credit with change of topic. Prerequisite: consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 380-0 Political & Social Thought in France (1 Unit)** Major political and social trends in France from the ancien régime to the 20th century. Content varies. May be repeated for credit with change of topic. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 384-0 Women Writing in French (1 Unit)** Analysis of texts by women authors with regard to their respective social, cultural, political, and historical contexts. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Literature Fine Arts Distro Area*

**FRENCH 386-0 Gender & Writing (1 Unit)** Issues of gender and sexuality in the production of literary and other creative texts in various historical periods. May be repeated for credit with change of topic. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 390-0 Topics in Literature and Culture (1 Unit)** Topics, issues, and questions in French and francophone culture. Content varies; may include French and francophone cinema, the intellectual in France. May be repeated for credit with change of topic. Prerequisite: FRENCH 271-0, FRENCH 272-0, or FRENCH 273-0, or consent of instructor. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 391-0 Theory and Practice of Translation (1 Unit)** Intercultural communication through analysis of translation theories and translated works; translation exercises. Content varies; genres may include prose, poetry, graphic novels, and theater. Prerequisite: FRENCH 301-0, FRENCH 302-0, study abroad, or consent of instructor.

**FRENCH 393-0 Foreign Language Teaching: Theory and Practice (1 Unit)** Theoretical foundation and practical applications of second-language acquisition and applied linguistics. Analysis and design of pedagogical materials. Self-reflection and analysis of teaching style and teaching philosophy. Prerequisite: senior status or consent of instructor.

**FRENCH 395-0 Advanced Studies in Culture and Thought (1 Unit)** Theoretical perspectives and paradigms for understanding culture through in-depth study of a historical, cultural, or theoretical issue or of a literary or artistic work. Independent term paper. Prerequisite: senior status or consent of undergraduate advisor. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**FRENCH 399-0 Independent Study (1 Unit)** Independent reading and research. Topics arranged through consultation with an instructor and approval of the department.

## Italian Courses

**ITALIAN 101-1 Elementary Italian (1 Unit)** Emphasis on oral communication, supported by grammar, writing, reading, and listening. Four class meetings a week. Prerequisite: none.

**ITALIAN 101-2 Elementary Italian (1 Unit)** Emphasis on oral communication, supported by grammar, writing, reading, and listening. Four class meetings a week. Prerequisite: Grade of at least C- in ITALIAN 101-1 or Department placement.

**ITALIAN 101-3 Elementary Italian (1 Unit)** Emphasis on oral communication, supported by grammar, writing, reading, and listening. Four class meetings a week. Prerequisite: Grade of at least C- in ITALIAN 101-2 or Department placement.

**ITALIAN 102-1 Intermediate Italian (1 Unit)** Grammar review, conversation, composition, and readings in modern prose and drama. Four class meetings a week. Prerequisite: ITALIAN 101-3 or equivalent.

**ITALIAN 102-2 Intermediate Italian (1 Unit)** Grammar review, conversation, composition, and readings in modern prose and drama. Four class meetings a week. Prerequisite: Grade of at least a C- in ITALIAN 102-1 or Department placement.

**ITALIAN 102-3 Intermediate Italian (1 Unit)** Grammar review, conversation, composition, and readings in modern prose and drama. Four class meetings a week. Prerequisite: Grade of at least C- in ITALIAN 102-2 or Department placement.

**ITALIAN 103-1 Italian for Musicians (1 Unit)** Italian language course for musicians, focusing on developing comprehension and pronunciation skills for operatic performance. Analysis of libretti and scores of Italian operas. Prerequisite: Grade of at least C- in ITALIAN 101-2 or Department placement.

**ITALIAN 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ITALIAN 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

### ITALIAN 106-0 Italian for Research (0 Unit)

**ITALIAN 110-0 Italian in the Business World (1 Unit)** Italian language course with an emphasis on communication and a cultural focus on business and its practices.

**ITALIAN 133-1 Intensive Italian (1 Unit)** Intensive double course covers two years of Italian language, the equivalent of Italian 101 and Italian 102, in a single academic year. Students enroll concurrently in ITALIAN 133-1 and ITALIAN 134-1 and receive 2 credits a quarter. Four two-hour class meetings a week. Prerequisite: none.

**ITALIAN 133-2 Intensive Italian (1 Unit)** Intensive double course covers two years of Italian language, the equivalent of Italian 101 and Italian 102, in a single academic year. Students enroll concurrently in ITALIAN 133-2 and ITALIAN 134-2 and receive 2 credits a quarter. Four two-hour class meetings a week. Prerequisite: Grade of at least C- in ITALIAN 133-1 and ITALIAN 134-1 or Department placement.

**ITALIAN 133-3 Intensive Italian (1 Unit)** Intensive double course covers two years of Italian language, the equivalent of Italian 101 and Italian 102, in a single academic year. Students enroll concurrently in ITALIAN 133-3 and ITALIAN 134-3 and receive 2 credits a quarter. Four two-hour class meetings a week. Prerequisite: Grade of at least C- in ITALIAN 133-2 and ITALIAN 134-2 or Department placement.

**ITALIAN 134-1 Intensive Italian (1 Unit)** Intensive double course covers two years of Italian language, the equivalent of Italian 101 and Italian 102, in a single academic year. Students enroll concurrently in ITALIAN 133-1 and ITALIAN 134-1 and receive 2 credits per quarter. Four two-hour class meetings per week. Prerequisite: none.

**ITALIAN 134-2 Intensive Italian (1 Unit)** Intensive double course covers two years of Italian language, the equivalent of Italian 101 and Italian 102, in a single academic year. Students enroll concurrently in ITALIAN 133-2 and ITALIAN 134-2 and receive 2 credits per quarter. Four two-hour class meetings per week. Prerequisite: Grade of at least C- in ITALIAN 133-1 and ITALIAN 134-1 or Department placement.

**ITALIAN 134-3 Intensive Italian (1 Unit)** Intensive double course covers two years of Italian language, the equivalent of Italian 101 and Italian 102, in a single academic year. Students enroll concurrently in ITALIAN 133-3 and ITALIAN 134-3 and receive 2 credits per quarter. Four two-hour class meetings per week. Prerequisite: Grade of at least C- in ITALIAN 133-2 and ITALIAN 134-2 or Department placement.

**ITALIAN 201-0 Italian Through Media (1 Unit)** Issues from Italian media; frequent oral and written reports: for instance, America in Italian media, advertising, immigration, youth culture. Students produce a newspaper or newscast at the end of the quarter. Required bridge course in the major/minor sequence. Prerequisite: ITALIAN 102-3 or ITALIAN 133-3 / ITALIAN 134-3 or equivalent.

**ITALIAN 202-0 Italian Through the Arts (1 Unit)** Students are introduced to pivotal objects, texts, and currents in the history of Italian visual arts (painting, sculpture, architecture, cinema). Required bridge course in the major/minor sequence. Prerequisite: ITALIAN 102-3 or ITALIAN 133-3 / ITALIAN 134-3 or equivalent. *Literature Fine Arts Distro Area*

**ITALIAN 203-0 Creative Writing in Italian (1 Unit)** A course meant to improve written Italian through exercises and experiments in a variety of genres and styles. Required bridge course in the major/minor sequence. Prerequisite: ITALIAN 102-3 or ITALIAN 133-3 / ITALIAN 134-3 or equivalent.

**ITALIAN 204-0 Introduction to Italian Literature (1 Unit)** Introduction to the history, genres, and themes of Italian literature. Course content may vary, focusing on reading, comprehension, and interpretive skills. May be repeated for credit with change in topic. Prerequisite: ITALIAN 102-3 or equivalent proficiency. *Literature Fine Arts Distro Area*

**ITALIAN 205-0 Voyage Through Italy (1 Unit)** An exploration of Italy's transnational history and identity. Addresses questions of internal and external migration, linguistic plurality, territory and ecology. Prerequisite: ITALIAN 102-3 or ITALIAN 133-3 / ITALIAN 134-3 or equivalent proficiency.

**ITALIAN 206-0 Business Italian (1 Unit)** Introduction to the business and economic environment in Italy. Study of business practice and development of linguistic skills necessary for professional communication.

**ITALIAN 207-0 Conversation in Italian (1 Unit)** Introduction to Italian culture. Emphasizes group activities and focuses on listening comprehension and speaking skills. Prerequisite: ITALIAN 102-3 or ITALIAN 133-3 / ITALIAN 134-3 or equivalent proficiency.

**ITALIAN 250-0 Topics in Italian Culture and Literature (1 Unit)** Cross-disciplinary exploration of a defined topic in Italian studies as it interacts

with other cultural and literary traditions-for example, aspects of love. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area*

**ITALIAN 251-0 Introduction to Italian Cinema (1 Unit)** Focus on filmmakers fundamental to the development of modern cinema (including Rossellini, Fellini, and Antonioni) from 1942 to the present. Emphasis on formal analysis and film criticism. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ITALIAN 275-0 Dante's Divine Comedy (1 Unit)** Introduction to the Divine Comedy, its artistic and intellectual achievement, and its cultural and historical context. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ITALIAN 277-0 Global Neorealism (1 Unit)** Exploration of Italian neorealism and its influence on European (especially the French New Wave), New Latin American, West African, and Indian cinema. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ITALIAN 304-0 Politics and Mass Culture (1 Unit)** Investigates the relation between politics and media (newspapers, radio, cinema, television, social media) from the Fascist period to the present. Texts in Italian and/or English, taught in English.

**ITALIAN 306-0 Migrations (1 Unit)** Investigates literature, arts, media in relation to groups that official culture has defined as other, either beyond or within its geographical boundaries. Texts in Italian and/or English, taught in English. *Literature Fine Arts Distro Area*

**ITALIAN 310-0 Reading Italian Literature (1 Unit)** Introduction to principal genres of Italian literature in historical and cultural context from the Middle Ages to the present. Authors include Dante, Boccaccio, Goldoni, Leopardi, Verga, Pirandello, Levi, and Montale. Texts in Italian and/or English, taught in English. *Literature Fine Arts Distro Area*

**ITALIAN 347-0 Italy in Art and Literature (1 Unit)** Interdisciplinary course on Italian culture from the Middle Ages to the present. Each week pairs an artist with an author-for instance, Giotto/Dante, Michelangelo/Vittoria Colonna, Caravaggio/Galilei, De Chirico/Pirandello, Fellini/Flaiano. Texts in Italian and/or English, taught in English. *Literature Fine Arts Distro Area*

**ITALIAN 348-0 The Italian Novella (1 Unit)** Exploration of Italian culture through the form of the novella from the Middle Ages to the present. Each week is devoted to a groundbreaking author, such as Boccaccio, Sacchetti, Basile, Pirandello, Flaiano, and Calvino. Texts in Italian and/or English, taught in English. *Literature Fine Arts Distro Area*

**ITALIAN 349-0 Topics in Italian Culture and Literature (1 Unit)** Advanced exploration of special topics in Italian studies.

**ITALIAN 350-0 Advanced Topics in Italian Culture and Literature (1 Unit)** Advanced exploration of special topics in Italian studies determined by the research interests of a visiting scholar. May be repeated for credit with change of topic. Prerequisite: consent of instructor. *Literature Fine Arts Distro Area*

**ITALIAN 351-0 Italian Film and Transnational Cinema (1 Unit)** In-depth exploration of key Italian filmmakers in the context of transnational cinema. Focus on relation between filmmakers (including Visconti/Renoir, Rossellini/Godard, and Antonioni/Wenders) and dynamics of cinematic style and cultural influence. *Literature Fine Arts Distro Area*

**ITALIAN 360-0 From the Avant-Garde to the Post-Modern (1 Unit)** Major authors and movements animating the modern and contemporary literary scene. Content varies-for example, futurism, feminist Italian fiction, and

intellectuals and politics from D'Annunzio to Pasolini, Calvino, Eco, and the postmodern. *Literature Fine Arts Distro Area*

**ITALIAN 370-0 Major Figures in Italian History and Culture (1 Unit)**

Investigation of the strategic roles played by Italian artists (da Vinci), scientists (Galileo), and political philosophers (Machiavelli, Vico) in forming the canon of modern thought.

**ITALIAN 374-0 Love and Sexuality in the Early Modern Period (1 Unit)**

Analysis of how love and sexuality work as generalized symbolic media of communication in early modern Italian society and culture. *Literature Fine Arts Distro Area*

**ITALIAN 377-0 Gender and Sexuality in Italian Culture (1 Unit)**

Interdisciplinary course on gender and visual practices in Italy (photography, film, television, and video). *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**ITALIAN 398-0 Undergraduate Seminar (1 Unit)** Advanced analysis and research of a topic in Italian culture. History of culture, literature, philosophy, the visual arts, film studies and theory of the image, gender and sexuality in contemporary Italy.

**ITALIAN 399-0 Independent Study (1 Unit)** Supervised independent reading. Consult the director of undergraduate studies.

## French Major

The major in French provides rigorous interdisciplinary training in the French language and the literary, cultural, and intellectual traditions of France and the French-speaking world.

Extensive coursework at all levels of language study prepares students to engage critically with a rich array of texts, images, and ideas from francophone cultures. Ranging in scope from the medieval period to the present, course content extends across regions and incorporates many genres, media, and historical documents, placing them in their social and political contexts. Majors acquire the tools for literary and cultural analysis, learn about the distinctive contributions of French critical thought, and complete an independent research paper. Students are thus prepared to be linguistically adept, global citizens who are attuned to the complexities of language and culture.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Prerequisite</b>	
<b>FRENCH 201-0</b> Culture and Society (or equivalent proficiency)	
<b>Major Requirements (14 units)</b>	
At most 5 200-level courses taught in French, including:	
<b>FRENCH 202-0</b>	Writing Workshop: Cultural Encounters in Contemporary France
<b>FRENCH 210-0</b> or <b>FRENCH 211-0</b>	Reading Literatures in French Reading Cultures in French
At least 1 but at most 2 of:	
<b>FRENCH 271-0</b>	Introducing the Novel
<b>FRENCH 272-0</b>	Introducing Theatre

FRENCH 273-0	Introducing Poetry
At least 9 courses must be at the 300 level, including:	
At least 1 advanced language course chosen from:	
FRENCH 300-0	French Phonetics
FRENCH 301-0	Advanced Language in Context: Society and Popular Culture
FRENCH 302-0	Advanced Writing: Finding Your Voice in French
FRENCH 303-0	Advanced Conversation: Debating Contemporary France
FRENCH 309-0	French For Professions
FRENCH 391-0	Theory and Practice of Translation
FRENCH 393-0	Foreign Language Teaching: Theory and Practice
At least 4 literature and culture courses selected from FRENCH 310 through FRENCH 390. At least 2 must cover the period prior to 1800.	
1 senior seminar.	
FRENCH 395-0	Advanced Studies in Culture and Thought
At most 2 300-level courses taught in English may be counted toward the major. Of these, 1 may be a course with at least 50 percent French content offered outside the department; the course will count as an elective.	
Courses with the requisite French content include: <sup>1</sup>	
ART_HIST 350-1 & ART_HIST 350-2	19th-Century Art 1: 1789–1848 and 19th-Century Art 2: 1848–1914
HISTORY 341-0	Paris: World City, 1700 to the Present
HISTORY 342-1 & HISTORY 342-2	The French Revolution and Napoleon and History of Modern France: 19th c. to present
PHIL 315-0	Studies in French Philosophy
No more than 1 399 may count toward the major unless the student is completing an honors thesis.	
At least 2 300-level courses must be completed at Northwestern.	

<sup>1</sup> Other courses may be approved at the discretion of the director of undergraduate studies.

## Exceptions and Waivers

- Majors who begin French studies in FRENCH 111-1 Elementary French, FRENCH 115-1 Intensive Elementary French, or FRENCH 121-1 Intermediate French may count FRENCH 201-0 Culture and Society as 1 elective course at the 200 level.
- Majors with an AP score of 5 or with departmental advanced placement, depending upon results of the French Language Placement Test, may either waive FRENCH 202-0 Writing Workshop: Cultural Encounters in Contemporary France or waive 1 elective course at the 200-level. In this case total course requirements for the major will be 13 courses, with a maximum of 4 200-level courses and at least 9 300-level courses.

## Honors in French

Majors with strong academic records and an interest in pursuing honors should contact the director of undergraduate studies no later than spring quarter of junior year. The honors thesis is produced through 2 quarters of FRENCH 399-0 Independent Study; these FRENCH 399-0 enrollments will count toward the 14 required units for the major. The thesis may build on previous work done in a 300-level course.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information see the department website or consult with the director of undergraduate studies and see Honors in the Major (p. 222).

## Courses

### Introductory and Intermediate Language Courses

Course	Title
FRENCH 111-1	Elementary French
& FRENCH 111-2	and Elementary French
& FRENCH 111-3	and Elementary French
FRENCH 115-1 & FRENCH 115-2	Intensive Elementary French and Intensive Elementary French
FRENCH 121-1 & FRENCH 121-2 & FRENCH 121-3	Intermediate French and Intermediate French and Intermediate French
FRENCH 125-1 & FRENCH 125-2 & FRENCH 125-3	Intensive Intermediate French and Intensive Intermediate French and Intensive Intermediate French
FRENCH 198-0	Independent Study
FRENCH 199-SA & FRENCH 299-SA	Language and Culture and Language and Culture
FRENCH 201-0	Culture and Society
FRENCH 202-0	Writing Workshop: Cultural Encounters in Contemporary France
FRENCH 203-0	Oral Workshop: Individual and Society in France Today

### Introductory Literature and Culture Courses

Introduction to texts in various genres such as essay, poetry, drama, novel, and autobiography, from at least two periods from the Middle Ages to the present. Prerequisite: FRENCH 202-0 Writing Workshop: Cultural Encounters in Contemporary France, AP score of 5, or consent of instructor.

Course	Title
FRENCH 210-0	Reading Literatures in French
FRENCH 211-0	Reading Cultures in French
FRENCH 271-0	Introducing the Novel
FRENCH 272-0	Introducing Theatre
FRENCH 273-0	Introducing Poetry

### Courses with Readings and Discussion in English

No prerequisite in French; readings, discussions, papers, and examinations in English.

Course	Title
FRENCH 277-0	French Existentialism
FRENCH 279-0	Theater in Translation
FRENCH 371-0	Giants, Cannibals, and Critique
FRENCH 374-0	Proust
FRENCH 375-0	French Film
FRENCH 376-0	Gender & Sexuality
FRENCH 378-0	Contemporary Theory
FRENCH 379-0	Topics in French Literature and Culture

### Courses with Prerequisites in French

Course	Title
FRENCH 300-0	French Phonetics
FRENCH 301-0	Advanced Language in Context: Society and Popular Culture
FRENCH 302-0	Advanced Writing: Finding Your Voice in French
FRENCH 303-0	Advanced Conversation: Debating Contemporary France

FRENCH 309-0	French For Professions
FRENCH 310-0	The Middle Ages & Renaissance
FRENCH 322-0	Medieval French Narratives
FRENCH 333-0	Topics in Renaissance Literature
FRENCH 335-0	17th Century Literature
FRENCH 340-0	Sexual Politics and the Ancien Regime
FRENCH 344-0	Rousseau and the French Revolution
FRENCH 346-0	Studies in the Enlightenment
FRENCH 355-0	Topics in Modern and Contemporary French Literature and Culture
FRENCH 360-0	From Modernism to Postmodernism
FRENCH 362-0	African Literatures and Cultures
FRENCH 364-0	Caribbean Literatures and Cultures
FRENCH 365-0	The Maghreb and the Middle East
FRENCH 366-0	France and East Asia
FRENCH 380-0	Political & Social Thought in France
FRENCH 384-0	Women Writing in French
FRENCH 386-0	Gender & Writing
FRENCH 390-0	Topics in Literature and Culture
FRENCH 391-0	Theory and Practice of Translation
FRENCH 393-0	Foreign Language Teaching: Theory and Practice
FRENCH 395-0	Advanced Studies in Culture and Thought
FRENCH 399-0	Independent Study

## French Minor

The goal of the minor in French is to give students a solid grounding and good fluency in the French language and to provide a basic familiarity with important aspects of French culture and society, enabling them to pursue their interests in French and in countries where French is used.

The minor is designed for students who have a strong interest in French but cannot fulfill the requirements of the French major.

Course	Title
<b>Prerequisite</b>	
FRENCH 201-0	Culture and Society (or equivalent proficiency)
<b>Minor Requirements (8 units)</b>	
At least 2 courses in language, including:	
FRENCH 202-0	Writing Workshop: Cultural Encounters in Contemporary France
1 advanced language course chosen from:	
FRENCH 300-0	French Phonetics
FRENCH 301-0	Advanced Language in Context: Society and Popular Culture
FRENCH 302-0	Advanced Writing: Finding Your Voice in French
FRENCH 303-0	Advanced Conversation: Debating Contemporary France
FRENCH 309-0	French For Professions
FRENCH 391-0	Theory and Practice of Translation
FRENCH 393-0	Foreign Language Teaching: Theory and Practice
At least 3 courses in literature and culture, including:	
FRENCH 210-0 or FRENCH 211-0	Reading Literatures in French Reading Cultures in French
FRENCH 271-0 or FRENCH 272-0 or FRENCH 273-0	Introducing the Novel Introducing Theatre Introducing Poetry
1 course selected from 310-367 or 380-390.	

1 additional course in literature and culture selected from 310 through 390, or 1 of the language courses 309 or 391 that is not being applied toward the advanced-language course requirement

2 elective courses in language or literature and culture at the 200 or 300 level

- No more than 1 300-level French department course offered in English may be counted toward the minor. Courses in English at the 200 level may not count toward the minor.
- At least 2 courses must be completed at Northwestern.

## Exceptions and Waivers

- Minors who begin French studies in FRENCH 111-1 Elementary French, FRENCH 115-1 Intensive Elementary French, or FRENCH 121-1 Intermediate French may count FRENCH 201-0 Culture and Society as 1 of the 2 elective courses in language or literature and culture in French.
- Minors with an AP score of 5 or with departmental advanced placement, depending upon results of the French Language Placement Test, may either waive FRENCH 202-0 Writing Workshop: Cultural Encounters in Contemporary France or waive 1 elective course at the 200-level. In this case total course requirements for the minor will be 7 courses.

## Italian Literature and Culture Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Major Requirements (13 units)

- At least 10 courses offered by the Italian department
  - At most 6 courses taught in English
  - At most 3 200-level courses taught in Italian
- At most 3 courses dealing with Italian culture offered by other departments
  - 1 or more courses on theory and methodology may be counted
  - Subject to approval of director of undergraduate studies
- At least 8 300-level courses
- 100-level courses do not count toward the major
- Students studying abroad may substitute for department courses 4 courses whose content relates in a substantive way to some aspect of Italian culture; 4 additional courses taken abroad dealing with Italian culture may be credited as courses offered by other departments. Returning students must take 2 300-level courses in Italian in senior year.

## Honors in Italian

Majors with strong academic records and an interest in pursuing honors should contact the director of undergraduate studies no later than spring quarter of junior year. The honors thesis is produced through 1 or 2 quarters of ITALIAN 399-0 Independent Study; these ITALIAN 399-0 enrollments will count toward the 14 required units for the major. The thesis may build on previous work done in a 300-level course or, with consent of the instructor, in a graduate seminar.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information see the department website (<https://www.frenchanditalian.northwestern.edu/undergraduate/french/honors-awards/departmental-honors.html>), consult with the director of undergraduate studies, and see Honors in the Major (p. 222).

## Courses

### Courses Taught in Italian

Prerequisites for all 300-level courses taught in Italian: 2 200-level courses in Italian or consent of instructor.

Course	Title
ITALIAN 101-1	Elementary Italian
& ITALIAN 101-2	and Elementary Italian
& ITALIAN 101-3	and Elementary Italian
ITALIAN 102-1	Intermediate Italian
& ITALIAN 102-2	and Intermediate Italian
& ITALIAN 102-3	and Intermediate Italian
ITALIAN 103-1	Italian for Musicians
ITALIAN 110-0	Italian in the Business World
ITALIAN 133-1	Intensive Italian
& ITALIAN 133-2	and Intensive Italian
& ITALIAN 133-3	and Intensive Italian
or ITALIAN 134-1	Intensive Italian
& ITALIAN 134-2	and Intensive Italian
& ITALIAN 134-3	and Intensive Italian
ITALIAN 201-0	Italian Through Media
ITALIAN 202-0	Italian Through the Arts
ITALIAN 203-0	Creative Writing in Italian
ITALIAN 204-0	Introduction to Italian Literature
ITALIAN 205-0	Voyage Through Italy
ITALIAN 206-0	Business Italian
ITALIAN 207-0	Conversation in Italian
ITALIAN 304-0	Politics and Mass Culture
ITALIAN 306-0	Migrations
ITALIAN 310-0	Reading Italian Literature
ITALIAN 347-0	Italy in Art and Literature
ITALIAN 348-0	The Italian Novella
ITALIAN 349-0	Topics in Italian Culture and Literature
ITALIAN 399-0	Independent Study

### Courses with Readings and Discussion in English

No prerequisites in Italian.

Course	Title
ITALIAN 250-0	Topics in Italian Culture and Literature
ITALIAN 251-0	Introduction to Italian Cinema
ITALIAN 275-0	Dante's Divine Comedy
ITALIAN 277-0	Global Neorealism
ITALIAN 350-0	Advanced Topics in Italian Culture and Literature
ITALIAN 351-0	Italian Film and Transnational Cinema
ITALIAN 360-0	From the Avant-Garde to the Post-Modern
ITALIAN 370-0	Major Figures in Italian History and Culture
ITALIAN 374-0	Love and Sexuality in the Early Modern Period
ITALIAN 377-0	Gender and Sexuality in Italian Culture

## Italian Minor

### Minor Requirements (6 units)

- No more than 3 Italian courses taught in English.
- At least 3 Italian courses at the 300 level.
- At least 1 course at the 300 level must be taught in Italian.

## French BA/MA

The department offers a BA/MA program in French for outstanding undergraduate majors. Information about degree requirements can be found in the Graduate Catalog section describing the combined BA/MA in French (<https://catalogs.northwestern.edu/tgs/french-francophone-studies/french-bach-mast/>). Interested undergraduate students should consult with the department chair.

## Gender and Sexuality Studies

[gendersexuality.northwestern.edu](http://gendersexuality.northwestern.edu)

The Gender and Sexuality Studies Program is a dynamic interdisciplinary program that draws on faculty and courses from more than 20 departments and several schools—including Weinberg College, the School of Communication, the Pritzker School of Law, the Feinberg School of Medicine, and the Henry and Leigh Bienen School of Music. The program offers a major and a minor for Northwestern undergraduates, as well as a certificate for graduate students. It includes 11 core faculty members with joint appointments as well as affiliated faculty. Faculty teach courses and pursue research in the history and theory of gender, feminism, women's studies, and sexuality studies, including gay, lesbian, and queer studies.

The many approaches, methods, and topics in gender and sexuality studies at Northwestern are united in focusing on gender, sex, and sexuality as key but often underexamined categories in history, scholarly study, and daily life. At the same time, they attend to questions of identity and sexual politics in ways that do not take for granted the particular sex/gender categories of the modern Western world.

A full range of courses is offered, from first-year seminars to graduate courses. They provide information and analysis of culture, society, history, and politics, often from a transnational and international perspective. Each year a number of undergraduate majors choose to write honors theses in gender and sexuality studies.

## Programs of Study

- Gender and Sexuality Studies Major (p. 316)
- Gender and Sexuality Studies Minor (p. 317)

**GNDR\_ST 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**GNDR\_ST 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**GNDR\_ST 220-0 Sexual Subjects: Introduction to Sexuality Studies (1 Unit)** Survey of sexuality studies across a range of disciplines.

Introduction to major theoretical and methodological approaches. Epistemology, morphology, history, subjectivity/identity, race formation, gender, social organization, and regulation. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**GNDR\_ST 221-0 Beyond Porn: Sexuality, Health and Pleasure (1 Unit)**

This lecture course goes beyond how sex and pleasure are depicted in pornography and popular culture, to equip students with information leading to more satisfying and healthy sexual experiences across their lifespan, regardless of how they identify, or who or what they like. The course familiarizes students with a wide spectrum of human identities, practices, and attitudes towards sex and sexuality. GBL\_HLTH 221-0 and GNDR\_ST 221-0 are taught together; may not receive credit for both. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 230-0 Traditions in Feminist Thought (1 Unit)** Introduction to milestone texts in European and American feminist thought, with particular attention to emerging arguments and strategies around issues of gender and sexuality. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 231-0 Gender, Sexuality, and Representation (1 Unit)**

Representations in art and literature within their historical, social, and political contexts. Theories of spectatorship, resistance, and revision. *Literature Fine Arts Distro Area*

**GNDR\_ST 232-0 Sexuality and Society (1 Unit)** Examination of the role of sexuality in the cultural, economic, political, and social organization of the United States. Sex work, sex tourism, sexual migration, LGBT social movements, and moral panics. SOCIOOL 232-0 and GNDR\_ST 232-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 233-0 Gender, Politics, and Philosophy (1 Unit)** Role of gender difference in the main political-philosophical traditions: social contract, liberalism, republicanism, socialism-Marxism, critical theory. Classics of feminist and political thought (Wollstonecraft, Mill, Taylor, Engels) and contemporary debates. PHIL 221-0 and GNDR\_ST 233-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**GNDR\_ST 234-0 Language & Gender (1 Unit)** Exploration of socially significant differences in the language used by/about/to men and women, focusing on the role of language in constructing gender as part of local communities of practice. LING 223-0 and GNDR\_ST 234-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 235-0 Beyond the Binary (1 Unit)** Exploration of transgender history, identity, and expression, with a focus on the intersection of gender and race. *U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 250-0 Gender Issues in Science and Health (1 Unit)** Aspects of gender in the cultures of science and medicine. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 260-0 Critical Fat Studies (1 Unit)** Explorations of the construction the body through gender, race, class, size, sexuality, ability and/or culture. Emphasis on science, health and/or medicine through the lens of cultural studies. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 321-0 Gender, Sexuality, and History (1 Unit)** Historical considerations of gender and/or sexuality. Topics may cover different historical time periods. Content varies by quarter; may be repeated for

credit with different topics. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**GNDR\_ST 324-0 US Gay and Lesbian History (1 Unit)**

Gender, sexuality, and the rise of modern lesbian and gay identities. HISTORY 324-0 and GNDR\_ST 324-0 are taught together; may not receive credit for both courses.

*Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 327-0 Language & Sexuality (1 Unit)** The use of language to construct sexual identity, focusing on the language of and about members of LGBTQ+ community. Topics include heteronormativity, identity labels and categories, gender vs. sex vs. sexuality, and cross-cultural sexual diversity. Taught with LING 327-0; may not receive credit for both courses. Prerequisite: any 200-level course in linguistics or consent of instructor.

**GNDR\_ST 331-0 Sociology of Gender and Sexuality (1 Unit)** Examination of gender and sexuality issues integral to social reproduction and social change. Content varies by quarter; may be repeated for credit with different topics. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GNDR\_ST 332-0 Gender, Sexuality, and Health (1 Unit)** Health-related topics concerning gender and/or sexuality. Topics include reproductive health, sexual health, HIV/AIDS, women's health movements, trans\* health and activism and disability studies. Content varies by quarter; may be repeated for credit with different topics. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GNDR\_ST 340-0 Gender, Sexuality, and the Law (1 Unit)** Examination of the changing role of law in governing gender and sexual relations in America. Legal definitions of gender and sexuality in the household, the marketplace, and the state. GNDR\_ST 340-0 and LEGAL\_ST 340-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 341-0 Transnational Perspectives on Gender and Sexuality (1 Unit)** Studies of gender and sexuality in relation to globalization or non-US/non-Western cultures. Content varies by quarter; may be repeated for credit with different topics. *Global Perspectives on Power, Justice, and Equity*

**GNDR\_ST 350-3 Research Seminar in Gender & Sexuality Studies (1 Unit)** Students research and complete a research paper or project on a topic of choice. Course number indicates distribution area in which a seminar counts. May be repeated for credit with change of topic. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 350-4 Research Seminar in Gender & Sexuality Studies (1 Unit)** Students research and complete a research paper or project on a topic of choice. Course number indicates distribution area in which a seminar counts. May be repeated for credit with change of topic. *Historical Studies Distro Area*

**GNDR\_ST 350-6 Research Seminar in Gender & Sexuality Studies (1 Unit)** Students research and complete a research paper or project on a topic of choice. Course number indicates distribution area in which a seminar counts. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area*

**GNDR\_ST 351-0 Gender, Sexuality, and Public Policy (1 Unit)** Studies of legal systems and public policy. Specific topics may include domestic violence and abortion legislation. Content varies by quarter; may be

repeated for credit with different topics. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 352-0 Gender, Sexuality, and Political Theory (1 Unit)** Studies in political theory relating to gender and sexuality. Content varies by quarter; may be repeated for credit with different topics. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 353-0 Gender and Citizenship (1 Unit)** Examinations of political participation and counter-public spheres informed by feminist activism and feminist and gender theory. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 361-0 Gender, Sexuality, and Literature (1 Unit)** Studies of literary texts in the context of gender theory, feminism, or sexuality studies. Content varies by quarter; may be repeated for credit with different topics. *Advanced Expression Literature Fine Arts Distro Area*  
*Literature and Arts Foundational Discipline*

**GNDR\_ST 362-0 Gender, Sexuality, and Drama (1 Unit)** Studies in gender and/or sexuality in the context of theater and drama in or across historical periods. Content varies by quarter; may be repeated for credit with different topics. *Literature Fine Arts Distro Area*

**GNDR\_ST 363-0 Postcolonial Studies and Gender and Sexuality (1 Unit)** Postcolonial approaches to gender and sexuality studies, including orientalism and diaspora theory. Content varies by quarter; may be repeated for credit with different topics. *Literature Fine Arts Distro Area*

**GNDR\_ST 371-0 Gender, Sexuality, and Popular Culture (1 Unit)** Cultural studies perspective on selected topics in popular culture as they relate to gender and/or sexuality. Content varies by quarter; may be repeated for credit with different topics. *Social Behavioral Sciences Distro Area*

**GNDR\_ST 372-0 Gender, Sexuality, and Performance (1 Unit)**

Selected topics concerning theories of performance in relation to gender and/or sexuality. Content varies by quarter; may be repeated for credit with different topics.

*Literature Fine Arts Distro Area*

**GNDR\_ST 373-0 Gender, Sexuality, and Film (1 Unit)** Representations of gender and sexuality in film and film theory. Content varies by quarter; may be repeated for credit with different topics. *Literature Fine Arts Distro Area*

**GNDR\_ST 374-0 Gender, Sexuality, and Digital Technologies (1 Unit)**

Theories concerning gender and sexuality in digital representations, particularly Internet related. Content varies by quarter; may be repeated for credit with different topics. *Literature Fine Arts Distro Area*

**GNDR\_ST 375-0 Internship in Gender and Sexuality Studies (1 Unit)**

Field research and practical work experience in activist organizations; biweekly meeting with the instructor and other interns for discussion of internship experiences and common readings. Prerequisite: consent of instructor.

**GNDR\_ST 380-0 Black Feminist Theory (1 Unit)**

Survey of black feminist theories. Content may vary by quarter. Fulfills the major's theory requirement.

**GNDR\_ST 381-0 Queer Theory (1 Unit)** Survey of queer theories and methodologies. Fulfills the major's theory requirement. Content varies by quarter. *Advanced Expression Literature Fine Arts Distro Area U.S. Perspectives on Power, Justice, and Equity*

**GNDR\_ST 382-0 Race, Gender, and Sexuality (1 Unit)** Literature and/or theory concerned primarily with the intersections of race and/or ethnicity and gender and sexuality. Content varies by quarter; may be repeated for credit with different topics. *Literature Fine Arts Distro Area*

**GNDR\_ST 390-0 Topics in Gender and Sexuality Studies (1 Unit)**

Topics vary. For example: masculinity; gender, race, and reproduction; gender, law, and public policy; Asian American women's history; women artists and their publics. May be repeated for credit with different topics.

**GNDR\_ST 396-0 Senior Capstone Seminar (1 Unit)** Introduction to research methods in the interdisciplinary study of gender and sexuality. *Advanced Expression*

**GNDR\_ST 397-0 Feminist Theory (1 Unit)**

Survey of gender and feminist theories. Content may vary by quarter. Fulfills the major's theory requirement.

**GNDR\_ST 398-0 Senior Research Seminar (1 Unit)** Students work with an adviser and begin research on a senior thesis project, meeting on a reduced schedule over two quarters. Prerequisite: consent of instructor.

**GNDR\_ST 399-0 Independent Study (1 Unit)** Individual tutorials or research projects. Prerequisite: consent of instructor.

## Gender and Sexuality Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Program Courses (11 units)</b>	
<b>2 Core Courses:</b>	
GNDR_ST 220-0	Sexual Subjects: Introduction to Sexuality Studies
GNDR_ST 230-0	Traditions in Feminist Thought
<b>2 Theory Courses:</b>	
GNDR_ST 381-0	Queer Theory
GNDR_ST 397-0 or GNDR_ST 380-0	Feminist Theory Black Feminist Theory
<b>2 Research Courses:</b>	
GNDR_ST 350-3 or GNDR_ST 350-4 or GNDR_ST 350-6	Research Seminar in Gender & Sexuality Studies Research Seminar in Gender & Sexuality Studies Research Seminar in Gender & Sexuality Studies
GNDR_ST 396-0 or GNDR_ST 398-0	Senior Capstone Seminar Senior Research Seminar

**5 Additional Courses, including:**

- At least 3 at the 300 level
- At least 1 with a historical focus <sup>1</sup>
- At least 1 with a transnational focus <sup>2</sup>

**Related Courses (4 units)**

At least 2 at the 300 level
Gender & Sexuality Studies courses (including co- or cross-listed) may be counted. Other courses that focus on gender and/or sexuality but are not co- or cross-listed may be approved by the Director of Undergraduate Studies.

<sup>1</sup> Historical focus courses may include (but are not limited to): GNDR\_ST 233-0 Gender, Politics, and Philosophy, GNDR\_ST 321-0 Gender, Sexuality, and History, GNDR\_ST 324-0 US Gay and Lesbian History.

<sup>2</sup> Transnational courses may include (but are not limited to): GNDR\_ST 341-0 Transnational Perspectives on Gender and

Sexuality, GNDR\_ST 353-0 Gender and Citizenship, GNDR\_ST 363-0 Postcolonial Studies and Gender and Sexuality.

## Honors in Gender and Sexuality Studies

Majors with strong academic records and an interest in pursuing honors should contact the honors coordinator (typically the Director of Undergraduate Studies) in their junior year and identify a faculty member who will serve as thesis adviser. Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information, consult the Director of Undergraduate Studies and see Honors in the Major (p. 222).

## Gender and Sexuality Studies Minor

Course	Title
<b>Minor Requirements (7 units)</b>	
<b>2 Core Courses:</b>	
GNDR_ST 220-0	Sexual Subjects: Introduction to Sexuality Studies
GNDR_ST 230-0	Traditions in Feminist Thought
<b>5 Additional Courses:</b>	
At least 2 at the 300 level.	
At least 1 must represent a humanities-based approach to gender and sexuality studies. <sup>1</sup>	
At least 1 must represent a social science-based approach to gender and sexuality studies. <sup>2</sup>	

All courses must be from gender and sexuality studies (including co- or cross-listed courses).

<sup>1</sup> Humanities-based courses may include (but are not limited to): GNDR\_ST 231-0 Gender, Sexuality, and Representation, GNDR\_ST 233-0 Gender, Politics, and Philosophy, GNDR\_ST 321-0 Gender, Sexuality, and History, GNDR\_ST 324-0 US Gay and Lesbian History, GNDR\_ST 361-0 Gender, Sexuality, and Literature.

<sup>2</sup> Social Science-based courses may include (but are not limited to): GNDR\_ST 232-0 Sexuality and Society, GNDR\_ST 331-0 Sociology of Gender and Sexuality, GNDR\_ST 351-0 Gender, Sexuality, and Public Policy, GNDR\_ST 353-0 Gender and Citizenship.

## General Liberal Arts

General Liberal Arts (GEN\_LA) are interdivisional courses open to all qualified students.

### General Liberal Arts (GEN\_LA) courses are listed below.

- See Weinberg College Policies (p. 219) for more details governing the Student Organized Seminar course.
- See Academic Options and Support (p. 222) for more about Study Abroad.

**GEN\_LA 100-BR Exploring the Liberal Arts (0.5 Unit)** For participants in Bridge I summer program. This course will preview the curriculum offered by Weinberg College, highlighted by lectures from faculty in different departments, and explain the distribution requirements in the College as well as the value of a broad liberal arts curriculum.

#### GEN\_LA 111-1 Introductory Topics in Language Study I (1 Unit)

Registration for students studying a foreign language through CourseShare at the introductory level. Permission required in advance.

#### GEN\_LA 111-2 Introductory Topics in Language Study II (1 Unit)

Registration for students studying a foreign language through CourseShare at the introductory level. Permission required in advance.

#### GEN\_LA 111-3 Introductory Topics in Language Study III (1 Unit)

Registration for students studying a foreign language through CourseShare at the introductory level. Permission required in advance.

**GEN\_LA 114-0 Internship (0 Unit)** Restricted to Weinberg College students who need documentation of an internship on their transcripts. Requires approval of the associate dean for undergraduate academic affairs. Contact college advisers for more information.

#### GEN\_LA 121-1 Intermediate Topics in Language Study I (1 Unit)

Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance.

#### GEN\_LA 121-2 Intermediate Topics in Language Study II (1 Unit)

Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance.

#### GEN\_LA 121-3 Intermediate Topics in Language Study III (1 Unit)

Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance. Does not automatically satisfy the Weinberg College foreign language proficiency requirement.

#### GEN\_LA 131-1 Advanced Topics in Language Study I (1 Unit)

Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance.

#### GEN\_LA 131-2 Advanced Topics in Language Study II (1 Unit)

Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance.

#### GEN\_LA 131-3 Advanced Topics in Language Study III (1 Unit)

Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance.

**GEN\_LA 132-0 Advanced Topics in Language Study (0 Unit)** Registration for students studying a foreign language through CourseShare at the intermediate level. Permission required in advance.

**GEN\_LA 150-0 Arch Scholar Mentoring Program (0 Unit)** A weekly 1-hour workshop for first-year students in the Arch Scholar programs. Workshops will focus on academic skills, professional development, and college success strategies. Only two excused absences are allowed. Instructor permission to register is required.

#### GEN\_LA 160-0 UPAL: Strategies for Advancing Learning (0 Unit)

Peer-mentored weekly small-group meetings about enhanced learning strategies. Time management, study strategies, interacting with faculty, and other topics.

**GEN\_LA 190-0 Science Research Workshops (0 Unit)** Support for getting integrated into lab research and applying for summer funding through the Office of Undergraduate Research with the help of a peer group leader and OUR staff. Prior acceptance into a lab or research group is required. Grade of satisfactory given to students who attend and participate in at least 7 of the weekly workshops.

#### GEN\_LA 280-1 Residence-Linked Seminar - I (Natural Sciences) (1 Unit)

Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College. *Natural Sciences Distro Area*

#### GEN\_LA 280-2 Residence-Linked Seminar - II (Formal Studies) (1 Unit)

Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated

faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College. *Formal Studies Distro Area*

**GEN\_LA 280-3 Residence-Linked Seminar - III (Social & Behavioral Sciences) (1 Unit)** Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College. *Social Behavioral Sciences Distro Area*

**GEN\_LA 280-4 Residence-Linked Seminar - IV (Historical Studies) (1 Unit)** Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College. *Historical Studies Distro Area*

**GEN\_LA 280-5 Residence-Linked Seminar - V (Ethics & Values) (1 Unit)** Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College. *Ethics Values Distro Area*

**GEN\_LA 280-6 Residence-Linked Seminar - VI (Literature and Fine Arts) (1 Unit)** Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College. *Literature Fine Arts Distro Area*

**GEN\_LA 280-7 Residence-Linked Seminar (1 Unit)** Seminar for students in a residential college or community on a theme of common interest. Meets in the residence and is directed by an associated faculty member. Enrollment is normally limited to 10 students. Proposals for seminars must be approved by the associate dean for undergraduate academic affairs of Weinberg College.

**GEN\_LA 290-0 Undergraduate Research (0 Unit)** Required registration for students receiving the Office of Undergraduate Research's Summer URG or a summer research grant from Weinberg College. Grade of satisfactory will be entered after final report is submitted and endorsed by the student's faculty sponsor.

**GEN\_LA 298-0 Student Organized Seminar (1 Unit)** Student-initiated seminar, supervised by a sponsoring faculty member. See Weinberg College Policies section of the Undergraduate Catalog for more information. P/N grading only.

**GEN\_LA 354-0 Study Abroad Affiliated (0 Unit)** Registration in an academic program outside the United States. Upon successful completion of the program, appropriate transfer credit is added. Not for self-service enrollment.

**GEN\_LA 355-0 Study Abroad Summer PT (0 Unit)** Registration in an academic program outside the United States. Upon successful completion of the program, appropriate transfer credit is added. Not for self-service enrollment.

**GEN\_LA 356-0 Study Abroad Unaffiliated (0 Unit)** Registration in an academic program outside the United States. Upon successful completion of the program, appropriate transfer credit is added. Not for self-service enrollment.

**GEN\_LA 357-0 Study at NU-Qatar, Doha Campus (0 Unit)** For Evanston-based Northwestern students studying in Qatar (NU-Q) for a term. Upon successful completion of the program, appropriate credit is added. Not for self-service enrollment.

**GEN\_LA 365-0 Domestic Study - Affiliated (0 Unit)** Registration in an academic program in the United States that is affiliated with Northwestern. Upon successful completion of the program, appropriate transfer credit is added. Not for self-service enrollment.

## German

[german.northwestern.edu](http://german.northwestern.edu)

With comprehensive courses in German and English, the German department affords students the opportunity to learn the German language; to understand the significance of German literature, thought, and culture in their European and global contexts; to study abroad in a variety of places and levels; and to pursue research in a variety of fields. Curricular offerings include:

- A thorough introduction to the German language, which can be used to fulfill the college language requirement. A variety of cultural and literary readings as well as cultural experiences cultivate awareness of the differences in written and spoken German in various countries and highlight the impact of language and culture in European and global contexts.
- A broad exposure to issues and discourses pertinent to modern German literature, culture, cultural forms, and practices, history, and politics. Coursework may focus on the major periods and forms of German literature with emphasis on literary and historical analysis; on architecture, art, film, dance, music, and other forms of media broadly conceived; on German/European politics and history; on environmentalism, German philosophy, or political and cultural theory.

Students in the department are regularly accepted into internship programs and graduate programs in a variety of disciplines, as well as prestigious postgraduate programs of the Fulbright Commission, the German Academic Exchange Service, and the Austrian-American Educational Commission.

## Business German and Advanced German Examinations

Business German credentials are important in today's job market for two reasons: German is a leading language in the European market and German corporations have more than 2,500 subsidiaries and affiliates in the United States that employ nearly 600,000 Americans.

The department currently offers several courses that specifically address the Business German language and culture as well as historical and political issues related to Business German:

- GERMAN 209-0 German in the Business World or GERMAN 213-0 History, Politics, and Culture in 21st Century German
- GERMAN 309-1 The German Market and the Globalized Economy
- GERMAN 309-2 Germany, Inc.: Marketing and Corporate Social Responsibility

If you are looking for German credentials beyond a German Major or Minor from Northwestern University, there are several tests available that are recognized world wide:

- **Goethe-Test PRO: German for Professionals** (Goethe-Test PRO: Deutsch für den Beruf) is a computer-based German online test that evaluates listening and reading competence in the workplace quickly and reliably. The test is based on the Common European Framework of Reference for Languages (CEFR). You will find more information on this test here (<https://www.goethe.de/en/spr/kup/prf/prf/bul.html>).
- **Prüfung Wirtschaftsdeutsch International (PWD)** is an internationally recognized test given at Carl Duisberg Centers, various Goethe Institutes and the Association of German Chambers of Commerce and Industry. The standardized exam is carried out around the world and is recognized by employers in many countries as evidence of a high level of German business language proficiency. The level of the PWD is between levels B2 and C1 of the European Framework. You will find more information on this test here (<https://www.dihk-bildungs-gmbh.de/weiterbildung/pruefungen-von-a-z/weitere-pruefungskategorien/wirtschaftsdeutsch/>).
- **TestDaF** is an advanced-level language exam. It covers levels B2 to C1 on the six-level scale of competence in the Common European Framework of Reference for Languages (CEFR). The successful completion of all four sections of the TestDaF exam at TestDaF level 4 will act as evidence of the language skills needed to gain admission to almost any subject and degree course at universities and institutions of higher education in Germany. The TestDaF language exam also provides internationally recognized evidence that your knowledge of German is sufficient to complete scientific projects and enter academic professions. No specialist knowledge is required to take the exam. You will find more information on this test here (<https://www.goethe.de/en/spr/kup/prf/prf/testdaf.html>).

## Study Abroad and Internships Abroad

The Department of German works carefully with students to integrate a period of study or internship experience in Germany, Austria, or Switzerland into their overall academic plans. By living in the culture and interacting with native German speakers, students typically return with a much firmer grasp of both written and spoken German as well as a more balanced international perspective. Students who have special interests and needs are welcome to investigate other programs and discuss them with the departmental study abroad adviser. There are a variety of internal grants (departmental and university wide) and fellowship opportunities for students in German planning on studying abroad or doing an internship in a German speaking country. Early planning and early application is essential, however. Students will find more information here (<https://german.northwestern.edu/study-abroad/grants-fellowships-internal.html>).

## Programs of Study

- German Major (p. 322)
- German Minor (p. 323)
- German Studies Minor (p. 323)
- Business German Minor (p. 324)

**GERMAN 101-1 Beginning German (1 Unit)** This sequence offers students a systematic introduction to German language and culture emphasizing reading, writing, speaking, and listening comprehension. Prerequisite: None or one year of high-school German or placement test results.

**GERMAN 101-2 Beginning German (1 Unit)** This sequence offers students a systematic introduction to German language and culture

emphasizing reading, writing, speaking, and listening comprehension. Prerequisite: GERMAN 101-1 or placement test results.

**GERMAN 101-3 Beginning German (1 Unit)** This sequence offers students a systematic introduction to German language and culture emphasizing reading, writing, speaking, and listening comprehension. Prerequisite: GERMAN 101-2 or placement test results.

**GERMAN 101-SA-1 Beginning German (1 Unit)** This sequence offers students a systematic introduction to German language and culture emphasizing reading, writing, speaking, and listening comprehension. Prerequisite: None or one year of high-school German or placement test results.

**GERMAN 102-1 Intermediate German (1 Unit)** This sequence offers students a systematic review of German language and culture. The class fosters learning in the four modalities: speaking, listening comprehension, reading, and writing. Prerequisite: GERMAN 101-3 or placement test results.

**GERMAN 102-2 Intermediate German (1 Unit)** This sequence offers students a systematic review of German language and culture. The class fosters learning in the four modalities: speaking, listening comprehension, reading, and writing. Prerequisite: GERMAN 102-1 or placement test results.

**GERMAN 102-3 Intermediate German (1 Unit)** This sequence offers students a systematic review of German language and culture. The class fosters learning in the four modalities: speaking, listening comprehension, reading, and writing. Prerequisite: GERMAN 102-2 or placement test results.

**GERMAN 102-SA-1 Intermediate German (1 Unit)** This sequence offers students a systematic review of German language and culture. The class fosters learning in the four modalities: speaking, listening comprehension, reading, and writing. Prerequisite: GERMAN 101-3 or placement test results.

**GERMAN 104-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**GERMAN 104-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**GERMAN 105-0 German for Research (0 Unit)**

Introduction to the translation of scholarly and scientific German texts. No prerequisites in the language.

**GERMAN 115-0 Beginning German through Musical Journeys in Vienna (1 Unit)** Interdisciplinary course offering musically interested students the opportunity to acquire German language skills through an immersion in the musical and cultural history of Vienna. Prerequisite: None or one year of high-school German or placement test results.

**GERMAN 201-0 Focus Reading (1 Unit)** Course for students who would like to explore German texts in more depth. Examines contemporary German culture. May be repeated for credit with change of topic. (This course will not count for the language requirement but may be taken concurrently with GERMAN 102-3). Prerequisite: GERMAN 102-2 or placement test results.

**GERMAN 203-0 Focus Speaking (1 Unit)** Practical training in listening comprehension and speaking. Examines contemporary German culture. May be repeated for credit with change of topic. (This course will not

count for the language requirement but may be taken concurrently with GERMAN 102-3). Prerequisite: GERMAN 102-2 or placement test results.

**GERMAN 205-0 Focus Writing (1 Unit)** Development of written proficiency in German through analysis and production of portraits, descriptions, narratives, reviews of films, reports, argumentative essays, advertisements, and interpretations of literary works. Prerequisite: GERMAN 102-3 or placement test results.

**GERMAN 205-SA Focus Writing (1 Unit)** Development of written proficiency in German through analysis and production of portraits, descriptions, narratives, reviews of films, reports, argumentative essays, advertisements, and interpretations of literary works. Prerequisite: GERMAN 102-3 or placement test results.

**GERMAN 207-0 Current Events in German Media (1 Unit)** Exploration of current events in a variety of German media (newspapers, TV, Internet, etc.). Topics include politics, music, film, sports, and cultural issues. Prerequisite: GERMAN 102-3.

**GERMAN 209-0 German in the Business World (1 Unit)** German language study oriented toward business-related communication situations, such as social interactions with customers, business travel, basic business letters. Prerequisite: One 200-level course in German.

**GERMAN 211-0 German Culture through Film (1 Unit)** Introduction to 20th century German cinema. Discussion of German identity, culture, history, and politics. Course emphasizes cultural knowledge and German language skills. Prerequisite: One 200-level course in German. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 213-0 History, Politics, and Culture in 21st Century German (1 Unit)** In-depth cultural and linguistic exploration of history, politics, and current issues (e.g., integration of foreigners, multicultural life) in Germany. Prerequisite: GERMAN 102-3 or placement exam results. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipline*

**GERMAN 221-1 Introduction to German Literature: 1800-1900 (1 Unit)** Introduction to representative texts and writers of 19th century German literature. Familiarization with literary analysis and genres. Prerequisite: One 200-level course in German. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 221-2 Introduction to German Literature: 1900-1945 (1 Unit)** Introduction to representative German texts and writers of the first half of the 20th century, when the First World War, the Weimar Republic, and the Third Reich marked the demise of the German Empire. Prerequisite: One 200-level course in German. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 221-3 Introduction to German Literature: 1945-today (1 Unit)** Introduction to representative short stories by major German-speaking authors since 1945. The stories represent a dynamic period in German literature and highlight important social, political, and intellectual issues. Prerequisite: GERMAN 102-3 or placement test results. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 224-0 Contemporary Germany (1 Unit)** The German political, social, and cultural scene after 1945. Prerequisite: None. May be repeated for credit with different topic. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area*

**GERMAN 224-SA Contemporary Germany (1 Unit)** The German political, social, and cultural scene after 1945. Prerequisite: None. May be repeated

for credit with different topic. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area*

**GERMAN 228-0 History of German Film (1 Unit)** In-depth study of German films and cultural background. Topics may vary-for example, the pioneer film or "new" German cinema. Prerequisite: None. May be repeated for credit with different topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 230-0 Berlin and the Culture of Democracy (1 Unit)** History and culture of the city from 1900 to the present, including the Weimar period, Nazi regime, the divisions of the Cold War, and the newly unified capital. Prerequisite: none. *Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 232-0 The Theme of Faust Through the Ages (1 Unit)** Faust theme in literature and music through shifting intellectual and social climates from the 16th century to the present. Prerequisite: None. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 234-1 Jews and Germans: An Intercultural History I (1 Unit)** Exploration of Jewish encounters with German culture. German Jewry from the 18th century to the end of the 19th century, when Jews were granted legal standing as German citizens. Prerequisite: None. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 234-2 Jews and Germans: An Intercultural History II (1 Unit)** Jewish culture-German culture exploration. German-speaking Jewry from the late 19th century to 1933. Prerequisite: None. *Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 236-0 Kafka and Nietzsche (1 Unit)** Exploration of two key figures in German modernity. Analysis of the relation between philosophy and literature; inquiry into the idea of the "ascetic ideal." Prerequisite: None. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 238-0 Decadence and Desire: Turn-of-the-Century Vienna (1 Unit)** Literature and thought of fin de siècle Vienna and their impact on modern consciousness. Fiction, poetry, essays, and plays by Freud, Schnitzler, Wittgenstein, Hofmannsthal, Musil, Karl Kraus, and Schoenberg. Prerequisite: None. *Literature Fine Arts Distro Area*

**GERMAN 242-0 Imagining Modern Jewish Culture in Yiddish and German (1 Unit)** History and character of Yiddish and the development of modern German culture and German-Jewish culture. Appreciation of the variety of "Judaisms" imagined and reimagined during modern European history. Prerequisite: None. GERMAN 242-0 and JWSH\_ST 242-0 are taught together; may not receive credit for both courses. *Literature Fine Arts Distro Area*

**GERMAN 244-0 Analyzing Freud (1 Unit)** Freud's work from a comparative and interdisciplinary perspective. Fundamental texts by Freud in dialogue with related materials that situate him in historical, cultural, and intellectual context. Prerequisite: None. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 245-0 Special Topics in German Literature and Culture (1 Unit)** Studies of a major author, a prominent theme in German literature or

culture, a movement, or a genre. May be repeated for credit with different topic. Prerequisite: One 200-level course in German. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 246-0 Special Topics in German Literature and Culture (1 Unit)** Studies of a major author, a prominent theme. Topics vary-for example, the fairy tale, Germanic mythology. Prerequisite: None. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 248-0 Migration in the German Past and Present: Gastarbeiter, Refugees, Displaced Persons (1 Unit)** Explores how migration from and to Germany has impacted and shaped the country's political, social, and cultural development as an increasingly diverse country. Prerequisite: None. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area*

**GERMAN 266-0 Introduction to Yiddish Culture: Images of the Shtetl (1 Unit)** Analysis and discussion of the literary, visual, and filmic images of the communal life developed by Eastern European Jews and inseparably associated with them. Prerequisite: None. GERMAN 266-0 and JWSH\_ST 266-0 taught together; students may receive credit for only one of these. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 272-0 Luther and the West (1 Unit)** Examination of Luther's work in the context of his life and times. Introduces basic dimensions of Western thought, showing how theology relates to broader cultural, political, social, and aesthetic issues. Prerequisite: None. GERMAN 272-0 and RELIGION 272-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**GERMAN 303-0 Advanced Expression in German speaking (1 Unit)** A course to improve German listening and speaking skills to the advanced level. Uses current cultural texts, films, and television broadcasts. Prerequisite: Two 200-level courses in German. *Advanced Expression Global Perspectives on Power, Justice, and Equity*

**GERMAN 305-0 Advanced Creative Expression in German writing (1 Unit)** Practice of advanced and sophisticated structures of written German through a series of linguistic exercises. Readings may vary. Prerequisite: Two 200-level courses in German. *Advanced Expression*

**GERMAN 307-0 German Mass Media: from broadcast to stream (1 Unit)** Discussion of history of German media and journalistic differences. Topics include current events in newspapers, magazines, Internet sources, and news broadcasts. . Prerequisite: Two 200-level courses in German. *Advanced Expression*

**GERMAN 309-1 The German Market and the Globalized Economy (1 Unit)** Germany's economy, its current problems, business practices, and differences from the United States. Prerequisite: Two 200-level courses in German. *Advanced Expression*

**GERMAN 309-2 Germany, Inc.: Marketing and Corporate Social Responsibility (1 Unit)** Students gain skills to function in a multitude of German business contexts, such as management and marketing. They also increase their cross-cultural knowledge and intercultural competency. Prerequisite: Two 200-level courses in German. *Advanced Expression*

**GERMAN 321-1 Reason, Revolution, and Despair: 1800-1900 (1 Unit)** Discussion of key texts in German intellectual history from the Enlightenment to the prerevolutionary period in the 1830s. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Historical Studies Distro Area Interdisciplinary Distro - See Rules*

(p. 216) *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 321-2 Myth and Modernity: 1900-1945 (1 Unit)** Literature and thought, events, and ideologies that shaped German cultural, political, and social life from 1900 to 1945, during the Weimar Republic and the Nazi state. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 321-3 Recoveries and Transitions: 1945-Present (1 Unit)** Examination of the relationship of literature and film to the sociopolitical sphere since 1945. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 322-0 German Contributions to World Literature (1 Unit)** Topics vary-for example, Rilke's poetry; Nietzsche's influence on literature; Thomas Mann; Hesse, the German novel, and the mystic tradition; German intellectual history. Prerequisite: None. May be repeated for credit with different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 324-0 Modern German Drama (1 Unit)**

Plays by authors ranging from Heinrich von Kleist to Peter Weiss, from the perspective of the stage as a "moral institution." Prerequisite: None.

*Literature Fine Arts Distro Area*

**GERMAN 327-0 The German Avant-Garde and the Culture of Modernism (1 Unit)** Literary and artistic reactions to the impact of modernity, war, and revolution and on the individual and collective experience in Berlin from 1910 to 1920. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 328-0 Prague: City of Cultures, City of Conflict (1 Unit)**

Examination of the cultural, political, and social transformation of Prague from the 19th century to the present. Cosmopolitan Prague, communist Prague, and capitalist Prague. SLAVIC 328-0 and GERMAN 328-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 331-0 Shattered Worlds: Representation after the Shoah (1 Unit)**

Examination of the role of German literature and art in the creation of historical consciousness in the postwar period. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 333-0 Literature of the Cold War (1 Unit)** Study of the literature and culture of the German Democratic Republic within social, political, and historical contexts. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 334-0 Writers and their Critics (1 Unit)** Study of the texts of leading writers in German through a discussion of the criticism these texts have evoked. Emphasis on 20th and 21st century criticism. Prerequisite: None. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 335-0 Minority Voices in Germany (1 Unit)** Study of minority literatures in Germany (including Turkish, Italian, Afro German, and

Jewish) within social, political, and historical contexts. Prerequisite: Three 200-level courses in German (at least one in literature). *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 337-0 Science and Culture in Germany (1 Unit)** Exploration of key texts popularizing major scientific innovations in Germany. The focus is on tracing the scientific, political, philosophical, aesthetic history of German as a "green nation" from the 18th century until today. Prerequisite: Three 200-level courses in German (at least one in literature). *Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216)*

**GERMAN 344-1 German History: Weimar and Nazi Germany (1 Unit)** Survey of German political, economic, social, intellectual, and diplomatic history covering Weimar and Nazi Germany. Prerequisite: None. GERMAN 344-1 and HISTORY 344-1 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**GERMAN 344-2 German History: Germany Since 1945 (1 Unit)** Survey of German political, economic, social, intellectual, and diplomatic history covering Germany beginning in 1945 to reunification at the end of the Cold War. Prerequisite: None. GERMAN 344-2 and HISTORY 344-2 are taught together; may not receive credit for both courses. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**GERMAN 345-0 Topics in German Literature and Culture (1 Unit)** In-depth study of topics in German literature and/or pivotal periods in German culture. Prerequisite: Three 200-level courses in German (at least one in literature). May be repeated for credit with different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 346-0 Topics in German Literature and Culture (1 Unit)** In-depth study of topics in German literature and/or pivotal periods in German culture. Prerequisite: None. May be repeated for credit with different topic. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**GERMAN 349-0 The History of the Holocaust (1 Unit)** Origins and development of the genocide of European Jewry during World War II. Prerequisite: none. HISTORY 349-0 and GERMAN 349-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**GERMAN 366-0 Yiddish Culture and the Holocaust (1 Unit)** Analysis of modern Yiddish literature before the Holocaust as well as literary work that emerged from Yiddish-speaking writers who survived the Second World War. Prerequisite: None. GERMAN 366-0. and JWSH\_ST 366-0 taught together; may receive credit for only one course. *Literature Fine Arts Distro Area*

**GERMAN 398-0 Undergraduate Seminar (1 Unit)** Advanced work through supervised reading, research, and discussion. Prerequisite: Three 200-level courses in German (at least one in literature).

**GERMAN 399-0 Independent Study (1 Unit)** Open to outstanding German majors with senior standing. Prerequisite: Three 200-level courses in German (at least one in literature).

## German Major

The German major is designed for students to accomplish two broad goals: a) to develop their language proficiency and gain linguistic

confidence; and b) to become familiar with issues and discourses pertinent to modern German literature, culture, cultural forms and practices, history, and politics. Coursework may focus on the major periods and forms of German literature with emphasis on literary and historical analysis; on architecture, art, film, dance, music, and other forms of media broadly conceived; on German/European politics and history; on environmentalism, German philosophy, or political and cultural theory.

Students majoring in German take 12 courses in the department or abroad (students may count up to 8 courses from a year abroad and 4 courses from a semester abroad towards the German major).

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Prerequisite

- GERMAN 102-3 Intermediate German or equivalent proficiency.

## Department Courses (12 units)

- **8 core courses** from the list posted on the department website
  - 4 German-language courses in language and media
    - 2 at the 200 level
    - 2 at the 300 level; or as discussed with the DUS
  - 4 German-language courses in literature, culture, history, and politics
    - 2 at the 200 level
    - 2 at the 300 level; or as discussed with the DUS
- **4 elective courses** taught in the German department chosen according to the interests of the students.
  - Up to two courses taught in English may be counted towards the elective courses.

## Notes:

- Courses listed as prerequisites for an advanced course may not be taken for credit after the advanced course has been completed.
- Majors returning from a study abroad program must enroll in at least 1 200-level or 300-level course in the department.
- Students with an interest in a complementary language may petition the DUS to count 1 or 2 quarters of language study towards the elective courses.

## Honors in German

Majors with strong academic records and an interest in pursuing honors should contact the honors advisor in spring of junior year. They may qualify for departmental honors by completing 2 quarters of GERMAN 398-0 Undergraduate Seminar or GERMAN 399-0 Independent Study; 2 quarters of 400-level courses; or 1 quarter of GERMAN 398-0 or GERMAN 399-0 and 1 quarter of a 400-level course. These courses may count toward the major. Students must present a research paper at the end of their second quarter of honors study.

Students whose research paper and grades meet department criteria are recommended to the college for graduation with honors. For more

information consult the director of undergraduate studies and see Honors in the Major (p. 222).

## Courses

### Courses Taught in German

Course	Title
GERMAN 101-1	Beginning German
& GERMAN 101-2	and Beginning German
& GERMAN 101-3	and Beginning German
GERMAN 102-1	Intermediate German
& GERMAN 102-2	and Intermediate German
& GERMAN 102-3	and Intermediate German
GERMAN 115-0	Beginning German through Musical Journeys in Vienna
GERMAN 201-0	Focus Reading
GERMAN 203-0	Focus Speaking
GERMAN 205-0	Focus Writing
GERMAN 207-0	Current Events in German Media
GERMAN 209-0	German in the Business World
GERMAN 211-0	German Culture through Film
GERMAN 213-0	History, Politics, and Culture in 21st Century German
GERMAN 221-1	Introduction to German Literature: 1800-1900
GERMAN 221-2	Introduction to German Literature: 1900-1945
GERMAN 221-3	Introduction to German Literature: 1945-today
GERMAN 245-0	Special Topics in German Literature and Culture
GERMAN 303-0	Advanced Expression in German speaking
GERMAN 305-0	Advanced Creative Expression in German writing
GERMAN 307-0	German Mass Media: from broadcast to stream
GERMAN 309-1	The German Market and the Globalized Economy
GERMAN 309-2	Germany, Inc.: Marketing and Corporate Social Responsibility
GERMAN 321-1	Reason, Revolution, and Despair: 1800-1900
GERMAN 321-2	Myth and Modernity: 1900-1945
GERMAN 321-3	Recoveries and Transitions: 1945-Present
GERMAN 327-0	The German Avant-Garde and the Culture of Modernism
GERMAN 331-0	Shattered Worlds: Representation after the Shoah
GERMAN 333-0	Literature of the Cold War
GERMAN 335-0	Minority Voices in Germany
GERMAN 337-0	Science and Culture in Germany
GERMAN 345-0	Topics in German Literature and Culture

### Courses with Readings and Discussion in English

No prerequisites in German.

Course	Title
GERMAN 224-0	Contemporary Germany
GERMAN 228-0	History of German Film
GERMAN 230-0	Berlin and the Culture of Democracy
GERMAN 232-0	The Theme of Faust Through the Ages
GERMAN 234-1	Jews and Germans: An Intercultural History I
GERMAN 234-2	Jews and Germans: An Intercultural History II
GERMAN 236-0	Kafka and Nietzsche
GERMAN 238-0	Decadence and Desire: Turn-of-the-Century Vienna
GERMAN 242-0	Imagining Modern Jewish Culture in Yiddish and German
GERMAN 244-0	Analyzing Freud
GERMAN 246-0	Special Topics in German Literature and Culture

GERMAN 248-0	Migration in the German Past and Present: Gastarbeiter, Refugees, Displaced Persons
GERMAN 266-0	Introduction to Yiddish Culture: Images of the Shtetl
GERMAN 272-0	Luther and the West
GERMAN 322-0	German Contributions to World Literature
GERMAN 324-0	Modern German Drama
GERMAN 328-0	Prague: City of Cultures, City of Conflict
GERMAN 334-0	Writers and their Critics
GERMAN 344-1	German History: Weimar and Nazi Germany
GERMAN 344-2	German History: Germany Since 1945
GERMAN 346-0	Topics in German Literature and Culture
GERMAN 349-0	The History of the Holocaust
GERMAN 366-0	Yiddish Culture and the Holocaust
GERMAN 398-0	Undergraduate Seminar
GERMAN 399-0	Independent Study

## German Minor

The Department of German offers minors in German, German Studies, and Business German. Students take 7 courses, including up to 4 courses from a year abroad, or 2 courses from a semester abroad. The minors are designed to help students develop a coherent set of courses in accordance with their own interests in German language, literature, thought, culture, politics, and business practices.

## Minor Requirements (7 units)

**Prerequisite:** GERMAN 102-3 Intermediate German or equivalent proficiency

- **5 core courses**
  - 3 German-language courses in advanced language and media, from list posted on the department website
    - 2 at the 200 level
    - 1 at the 300 level; or as discussed with the DUS
  - 2 German-language courses in literature, culture, history, and politics, from list posted on the department website
    - 1 at the 200 level
    - 1 at the 300 level, or as discussed with the DUS
- **2 elective courses** taught in the German department chosen according to the interests of the students. The courses may be in English or German.

### Notes:

- Courses listed as prerequisites for an advanced course may not be taken for credit after the advanced course has been completed.
- Minors returning from a study abroad program must enroll in at least 1 200-level or 300-level course in the department.

## German Studies Minor

The Department of German offers minors in German, German Studies, and Business German. Students take 7 courses, including up to 4 courses from a year abroad, or 2 courses from a semester abroad. The minors are designed to help students develop a coherent set of courses in accordance with their own interests in German language, literature, thought, culture, politics, and business practices.

The German Studies minor is for students with limited German language skills who are interested in learning more about German culture, literature, and thought.

## Minor Requirements (7 units)

**Prerequisite:** GERMAN 102-3 Intermediate German or equivalent proficiency

- **7 courses** taught in English or German chosen according to the broad interests of the student.
  - At least 5 courses must come from the departmental offerings.
  - Up to 2 courses can be chosen from a wide array of disciplines, such as Art History, Gender Studies, Philosophy, and Sociology as long as the content deals with German broadly conceived. Students should check with the DUS before enrolling in such courses.

## Business German Minor

The Department of German offers minors in German, German Studies, and Business German. Students take 7 courses, including up to 4 courses from a year abroad, or 2 courses from a semester abroad. The minors are designed to help students develop a coherent set of courses in accordance with their own interests in German language, literature, thought, culture, politics, and business practices.

## Minor Requirements (7 units)

**Prerequisite:** GERMAN 102-3 Intermediate German or equivalent proficiency

- **5 core courses**
  - 2 German-language courses in advanced language and media
    - 1 at the 200 level
    - 1 at the 300 level; or as discussed with the DUS
  - 3 German-language courses in Business German
    - 1 at the 200 level (GERMAN 209-0 or GERMAN 213-0)
    - 2 at the 300 level (GERMAN 309-1 and GERMAN 309-2)
- **2 elective courses** taught in the German department chosen according to the interests of the students. The courses may be in English or German.

### Note:

- Minors returning from a study abroad program must enroll in at least 1 300-level German-language course in the department.

## Global Health Studies

globalhealthstudies.northwestern.edu

Global health is of concern to individuals working in public and international policy, public health and medical professions, industry, commerce, engineering, disaster management, environmental sustainability and international agencies. Addressing challenging global health issues requires not only financial resources but, more importantly, a deep understanding of context: how cultural, social, economic, historical political, domestic and global realities affect the design and implementation of interventions meant to expand access to health and wellbeing.

The Program in Global Health Studies offers an adjunct major and a minor designed to provide the critical thinking and analytical skills necessary for addressing complex health issues at home and abroad. The curriculum focuses not only on the status of public and clinical health systems, but also on health disparities and inequities that lead to differential health outcomes.

As an inherently interdisciplinary program, Global Health Studies combines insights from history, anthropology, sociology, public health, political science, public policy, demography, epidemiology, engineering, environmental studies, international relations, and psychology to offer students multiple lenses through which to critically reflect upon and learn meaningful means to address some of the world's greatest challenges.

## Programs of Study

- Global Health Studies Adjunct Major (p. 326)
- Global Health Studies Minor (p. 328)

**GBL\_HLTH 201-0 Introduction to Global Health (1 Unit)** Introduces students to pressing disease and health care problems worldwide. The course identifies the main actors, institutions, practices, and forms of knowledge production characteristic of what we call "global health" today, and explores the factors that shape patterns and experiences of illness and healthcare across societies. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 221-0 Beyond Porn: Sexuality, Health and Pleasure (1 Unit)**

This lecture course goes beyond how sex and pleasure are depicted in pornography and popular culture, to equip students with information leading to more satisfying and healthy sexual experiences across their lifespan, regardless of how they identify, or who or what they like. The course familiarizes students with a wide spectrum of human identities, practices, and attitudes towards sex and sexuality. GBL\_HLTH 221-0 and GNDR\_ST 221-0 are taught together; may not receive credit for both. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 222-0 The Social Determinants of Health (1 Unit)** Advanced introduction to socioeconomic, political, and cultural determinants of health disparities between social groups and categories. Case studies from the United States, South Africa, and Brazil. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 302-0 Global Bioethics (1 Unit)**

Global health is a popular field of work and study for Americans, but though entered with the best of intentions, the work is beset with ethical questions, concerns, and dilemmas. In this course, students will assess emblematic ethical challenges in global health and consider approaches to addressing them.

*Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 303-0 (Re)mixing Qualitative Methods (1 Unit)** This course covers traditional and alternative data collection methods for public health research, with a focus on self-determination approaches used by Black/African American individuals. It promotes inclusivity in data collection and explores how individuals living in Black bodies navigate life and exercise agency in the face of systemic oppression. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 306-0 Biomedicine and Culture (1 Unit)** Comparative exploration of biomedical cultures in different contexts, both in the U.S. and other countries. This course covers how biomedicine intersects with

technology, consumerism, politics, economics, culture, power, and place. It further investigates the possibilities and limitations of biomedicine across the globe, particularly regarding how biomedical cultures affect and are affected by patients and health care workers. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 307-0 International Perspectives on Mental Health (1 Unit)**

Cross-cultural and international perspectives on mental health issues and examination of the impact of psychological illness on the global burden of disease. *Social Behavioral Sciences Distro Area*

**GBL\_HLTH 309-0 Biomedicine and World History (1 Unit)** Course covers four centuries, focusing especially on the power of disease and the limits of global health governance. It explains how different medical professions became dominant, why drug industries secured monopolies, and what effects these changes had on other medical cultures. GBL\_HLTH 309-0 and HISTORY 379-0 are taught together; may not receive credit for both courses. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 310-1 Supervised Global Health Research (1 Unit)** Majors and minors are encouraged to do supervised public health research on campus and abroad. Students receive elective credit for this course only when taught abroad, however.

**GBL\_HLTH 310-SA Supervised Global Health Research (1 Unit)** Majors and minors are encouraged to do supervised public health research on campus and abroad. Students receive elective credit for this course only when taught abroad, however.

**GBL\_HLTH 311-SA Health Care Systems in Europe and the United States (1 Unit)** Provides students with an understanding of the various ways in which health care systems are organized in European countries, the problems they face, and the reforms implemented or proposed at the national and EU levels. Restricted to students in Northwestern's Paris program.

**GBL\_HLTH 312-SA Public Health in Europe: Issues and Policies (1 Unit)** Examines issues and debates on health policy in France and the EU, including primary health issues, health insurance, health inequalities, HIV/AIDS, SARS, elderly care, and genetically modified organisms. Lectures are supplemented by visits to relevant sites. Restricted to students in Northwestern's Paris program.

**GBL\_HLTH 313-SA International Organizations and Health: A Research Seminar (1 Unit)** Students design team research projects, learn about research methodology, discuss their research progress, and present findings. Restricted to students in Northwestern's Paris program.

**GBL\_HLTH 314-SA Health and Community Development in South Africa (1 Unit)** Health-related issues confronting South Africa, their social and economic impact, efforts to address them. Apartheid and post-transition policies. Demographics, prevention, and treatment of both infectious and chronic non-communicable diseases. Restricted to students in Northwestern's South Africa program.

**GBL\_HLTH 315-SA Public Health in South Africa (1 Unit)** Context of and responses to public health issues in South Africa, including HIV/AIDS, tuberculosis, malnutrition and poverty, psychosocial rehabilitation, and environmental and occupational health. Lectures are supplemented by visits to relevant sites. Restricted to students in Northwestern's South Africa program. *Social Behavioral Sciences Distro Area*

**GBL\_HLTH 316-SA Development Perspectives on Health in South Africa Through Community Engagement (1 Unit)** Reflection on service-learning

experiences at community organizations in relation to theories of international development and global health. Focus on how health-related issues, including HIV/ AIDS, malnutrition, poverty, the environment, occupational health, and gender, impact development. Restricted to students in Northwestern's South Africa program. *Social Behavioral Sciences Distro Area*

**GBL\_HLTH 317-0 Native American Health Research & Prevention (1 Unit)**

This course introduces students to the benefits and barriers to various approaches meant to address negative health outcomes among Native American individuals, groups and communities. This course also demonstrates how harnessing positive social determinants of health can affect broader health status among Native Americans. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 318-0 Community-based Participatory Research Course (1 Unit)**

Oftentimes we hear of research done on communities. Community-based participatory research (CBPR) is a research paradigm that challenge researchers to conducted research with communities. In this reading intense discussion-based course, we will learn the historical and theoretical foundations, and the key principles of CBPR. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 319-0 Trauma and its Afterlives (1 Unit)** This course draws on perspectives from anthropology, related social scientific fields, and the humanities to provide a critical introduction to psychological trauma and its increasingly significant place in contemporary global health discourses and agendas. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 320-0 Qualitative Research Methods in Global Health (1 Unit)**

This course emphasizes research skills acquisition in a practical manner. Topics include how to design, conduct, analyze and write up qualitative ethnographic research. The course covers research methodologies, ethics and Institutional Review Boards, and ethnographic field methods such as participant observation, qualitative interviewing, life histories, focus groups, data coding and analysis. Students acquire research skills while receiving significant feedback throughout. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 321-0 War and Public Health (1 Unit)** Comparative overview of the impact of armed conflict on public health and healthcare delivery worldwide. Historical and contemporary case studies. Specific health needs of refugees and vulnerable populations. *Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 323-0 Global Health from Policy to Practice (1 Unit)**

Examines global health and development policy, from the politics of policy-making to the impacts of policy on global health practice and local realities. This course highlights the histories and material, political, and social realities of policy and its application. The course draws on case studies of policy makers, economists, public officials, health care workers, and aid recipients. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 324-0 Volunteerism and the Ethics of Help (1 Unit)** Explores the ethics of altruism through the discourses and practices that make up volunteering, from the perspectives of volunteers, hosts, and a range of others both promoting and critiquing volunteerism. What motivates people to volunteer among strangers or in unfamiliar contexts? What are the implications for volunteers, and communities and institutions

where foreign volunteering takes place? *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 325-0 History of Reproductive Health (1 Unit)** This course concerns the history of human reproduction from multiple vantage points. Since reproduction is often about power, the course is framed around the distribution of power in matters of reproduction; as such we will pay particular attention during this class to struggles over matters of reproduction as we explore historical changes and continuities in reproduction globally since 1900. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**GBL\_HLTH 326-0 Native Nations, Healthcare Systems, & U.S. Policy (1 Unit)** In what is currently the USA, healthcare for Native populations is often experienced as a tension between settler colonial domination and Native nations upholding their Indigenous sovereignty. This reading-intensive, discussion-based seminar provides students with a complex and in-depth understanding of the historical and contemporary policies and systems created for, by, and in collaboration with Native nations. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 332-SA Public Health in China (1 Unit)** Examination of China's public health system. Focus on role of government, emerging environmental problems, food safety, and prevalent communicable and non-communicable diseases. Restricted to students in Northwestern's China program. *Social Behavioral Sciences Distro Area*

**GBL\_HLTH 333-SA Traditional Chinese Medicine (1 Unit)** Introduces traditional Chinese medicine (TCM) principles and methods as they relate to Chinese culture and philosophy, including TCM diagnostics and therapies. Compares and discusses integration of TCM and Western medicine. Restricted to students in Northwestern's China program. *Social Behavioral Sciences Distro Area*

**GBL\_HLTH 337-0 Hazard, Disaster and Society (1 Unit)** This course examines how socioeconomic and environmental factors work together to cause hazards and disasters in human society. In this course, we learn the main concepts about disasters, such as preparedness, vulnerability, resilience, response, mitigation, etc. We learn that a disaster does not have the same effect on everyone, and factors of social inequality such as race, ethnicity, class, and gender make people more vulnerable to the impacts of disasters. ENVR\_POL 337-0 and GBL\_HLTH 337-0 are taught together; students may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 338-0 Environmental Justice (1 Unit)** This course examines how environmental problems reflect and exacerbate social inequality. In this course, we learn the definition of environmental (in)justice, the history of environmental justice and discuss examples of environmental justice. We will learn about environmental movements and local resistance to protect natural resources. ENVR\_POL 338-0 and GBL\_HLTH 338-0 are taught together; students may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 339-0 Silent but Loud: Negotiating Health in a Cultural, Food, Poverty, Environ. Caste (1 Unit)** This course will explore (un)health as a language is connected to certain bodies. Students will analyze the origins of bio-measurements used to justify "Othering" (not fitting within the norms of a dominant social group) and learn to formulate counternarratives to dominant ideological language that silently forms stereotypes, controlling images, hypervisibility, and invisibility that

echo loudly as contributing to health inequities. GBL\_HLTH 339-0 and ENVR\_POL 339-0 are taught together; may not receive credit for both. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**GBL\_HLTH 340-0 Mental Health and the Arts (1 Unit)** This course explores the role of the arts in shaping experiences of mental health and illness around the world. We will consider forms of storytelling across eras and cultures, tracking shifts in perspectives on normality and their consequences. What role can the arts play in healing? Where is the line between positive and exploitative representation of trauma and mental illness? *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 357-0 Biocultural Perspectives on Water Insecurity (1 Unit)** Explore many ways that water impacts humans around the world through the lens of anthropology, religion, biology, environment, and politics. Why do individual's experiences with water differ? How does water insecurity manifest? How do we measure it? How do we solve it? ANTHRO 357-0 and GBL\_HLTH 357-0 are taught together; students may not receive credit for both. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**GBL\_HLTH 390-0 Special Topics in Global Health (1 Unit)**

Advanced work in areas of developing interest and special significance. Can be repeated for credit with a different topic. Offered on campus and on Northwestern programs abroad. Recent courses include Ecology of Infant Feeding, Native American Health, and Public Health and Mental Health in Serbia.

**GBL\_HLTH 390-SA Special Topics in Global Health (1 Unit)** Advanced work in areas of developing interest and special significance. Can be repeated for credit with a different topic. Offered on campus and on Northwestern programs abroad. Recent courses include Ecology of Infant Feeding, Native American Health, and Public Health and Mental Health in Serbia.

**GBL\_HLTH 399-0 Independent Study (1 Unit)** Advanced work under faculty supervision. May be taken twice for credit but does not count toward the core or elective requirements. Prerequisite: department consent.

## Global Health Studies Adjunct Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Adjunct Major Requirements (11 units)</b>	
4 core courses:	
GBL_HLTH 201-0	Introduction to Global Health <sup>1</sup>
GBL_HLTH 302-0	Global Bioethics
GBL_HLTH 309-0 or GBL_HLTH 222-0 or GBL_HLTH 325-0	Biomedicine and World History <sup>2</sup> The Social Determinants of Health History of Reproductive Health
choice of one methods core course (one of these three, or see footnote): <sup>3</sup>	
GBL_HLTH 320-0 or GBL_HLTH 318-0	Qualitative Research Methods in Global Health Community-based Participatory Research Course

or GBL_HLTH 303-0 (Re)mixing Qualitative Methods 3 additional GBL_HLTH courses <sup>4</sup> 4 elective courses. Elective credits can be fulfilled by pre-approved health-related courses from various departments, as listed on the GHS major page and program website. Up to two courses taken abroad can be counted as electives provided they are NU or NU-affiliated study abroad programs and the courses have been pre-approved for GHS elective credit. Study abroad courses taken that are not NU affiliated need prior approval from the DUS.
<sup>1</sup> GBL_HLTH 301-0 (Introduction to International Public Health) from Spring 2022 or earlier may be applied in lieu of GBL_HLTH 201-0.
<sup>2</sup> GBL_HLTH 322-0 (The Social Determinants of Health) from Spring 2022 or earlier may be applied in lieu of GBL_HLTH 222-0, GBL_HLTH 309-0, or GBL_HLTH 325-0.
<sup>3</sup> The methods course requirement can be fulfilled by GBL_HLTH 390-0 when offered as <i>Quantitative Methods: Turning numbers into a Story</i> . If <i>Community Based Participatory Research</i> was taken prior to Spring 2023 as a topic under GBL_HLTH 390-0 rather than GBL_HLTH 318-0, that may also be applied. So too if (Re)mixing Qualitative Methods was taken prior to Fall 2024 as a topic under GBL_HLTH 390-0 rather than GBL_HLTH 303-0, that may also be applied.
<sup>4</sup> GBL_HLTH 399-0 Independent Study and courses taken abroad may not be counted toward this requirement.

**Note:**

- Students may elect to study abroad (<https://globalhealthstudies.northwestern.edu/academic-programs/study-abroad/>) as part of their Global Health Studies curriculum.
- All adjunct majors require completion of a stand-alone major as well.

**Approved elective courses (students may take courses from more than one subject area)****Anthropology**

Course	Title
ANTHRO 221-0	Social and Health Inequalities
ANTHRO 306-0	Evolution of Life Histories
ANTHRO 309-0	Human Osteology
ANTHRO 312-0	Human Population Biology
ANTHRO 314-0	Human Growth & Development
ANTHRO 315-0	Medical Anthropology
ANTHRO 332-0	The Anthropology of Reproduction
ANTHRO 359-0	The Human Microbiome and Health
ANTHRO 382-0 or ENVR_POL 384-0	Political Ecology
ANTHRO 386-0	Methods in Human Biology Research

**Biological Sciences**

Course	Title
BIOL_SCI 310-0	Human Physiology
BIOL_SCI 327-0	Biology of Aging
BIOL_SCI 337-0	Biostatistics
BIOL_SCI 341-0	Population Genetics
BIOL_SCI 355-0	Immunobiology
BIOL_SCI 377-0	The Human Microbiome
BIOL_SCI 380-0	Biology of Cancer

**Chemistry**

Course	Title
CHEM 316-0	Medicinal Chemistry: the Organic Chemistry of Drug Design and Action
CHEM 393-0	Green Chemistry

**Communications**

Course	Title
COMM_ST 246-0	Intro to Health Communication
COMM_ST 339-0	Health Communication and Precision Medicine
COMM_ST 367-0	Nonprofit Communication Management
COMM_ST 390-0	Children's Culture

**Economics**

Course	Title
ECON 307-0	Economics of Medical Care
ECON 359-0	Economics of Nonprofit Organizations

**Engineering**

Course	Title
BMD_ENG 325-0	Introduction to Medical Imaging
BMD_ENG 343-0	Biomaterials and Medical Devices
BMD_ENG 380-0	Medical Devices, Disease & Global Health
BMD_ENG 390-1	Biomedical Engineering Design
BMD_ENG 390-2	Biomedical Engineering Design
BMD_ENG 390-3	Biomedical Engineering Design
CHEM_ENG 373-0	Biotechnology and Global Health
CHEM_ENG 382-0	Regulatory Sciences in Biotechnology
CIV_ENV 361-2	Public & Environmental Health
ENTREP 340-0	Innovate for Impact
IEMS 365-0	Analytics for Social Good
IEMS 385-0	Introduction to Health Systems Management

**English**

Course	Title
ENGLISH 381-0	Literature & Medicine

**Environmental Policy and Culture**

Course	Title
ENVR_POL 384-0	Political Ecology
or ANTHRO 382-0	Political Ecology

**Field Studies**

Course	Title
CFS 391-0	Field Studies in Social Justice
CFS 392-0	Field Studies in Public Health
CFS 397-0	Field Studies in Civic Engagement

**Gender Studies**

Course	Title
GNDR_ST 331-0	Sociology of Gender and Sexuality
GNDR_ST 332-0	Gender, Sexuality, and Health
GNDR_ST 340-0 or LEGAL_ST 340-0	Gender, Sexuality, and the Law
GNDR_ST 341-0	Gender, Sexuality, and the Law
GNDR_ST 361-0	Transnational Perspectives on Gender and Sexuality
	Gender, Sexuality, and Literature

**History**

Course	Title
HISTORY 275-1	History of Early Modern Science and Medicine
HISTORY 275-2	History of Modern Science and Medicine
HISTORY 352-0	A Global History of Death and Dying

**Humanities**

Course	Title
HUM 220-0 or SOCIAL 220-0	Health, Biomedicine, Culture, and Society
	Health, Biomedicine, Culture, and Society

**International Studies**

Course	Title
INTL_ST 393-0	Development in the Global Context: Participation, Power, and Social Change

**Neuroscience**

Course	Title
NEUROSCI 303-0	Molecular Mechanisms of Neuropsychopharmacology

**Philosophy**

Course	Title
PHIL 268-0	Ethics and the Environment
PHIL 269-0	Bioethics
PHIL 326-0	Topics in Philosophy of Medicine

**Political Science**

Course	Title
POLI_SCI 326-0	Race and Public Policy
POLI_SCI 352-0 or SOCIAL 317-0	Global Development
POLI_SCI 377-0	Global Development
POLI_SCI 384-0	Drugs and Politics
	International Responses to Mass Atrocities

**Psychology**

Course	Title
PSYCH 303-0	Psychopathology
PSYCH 341-0	Positive Psychology: The Science of Well-Being
PSYCH 383-0	Psychology and Food

**Public Health**

Course	Title
PUB_HLTH 302-0	Introduction to Biostatistics
PUB_HLTH 304-0	Introduction to Epidemiology
PUB_HLTH 391-0	Global Health Care Service Delivery

**SESP**

Course	Title
SOC_POL 333-0	Economics of Health, Human Capital, and Happiness

**Sociology**

Course	Title
SOCIOl 220-0 or HUM 220-0	Health, Biomedicine, Culture, and Society
SOCIOl 317-0 or POLI_SCI 352-0	Health, Biomedicine, Culture, and Society
SOCIOl 320-0	Global Development
SOCIOl 325-0	Global Development
	Gender, Health, and Medicine
	Global & Local Inequalities

SOCIOl 336-0 or ENVR_POL 336-0	The Climate Crisis, Policies, and Society The Climate Crisis, Policies, and Society
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**Spanish**

Course	Title
SPANISH 205-0	Spanish for Professions: Health Care

**Statistics**

Course	Title
STAT 332-0	Statistics for Life Sciences
STAT 370-0	Human Rights Statistics

**Additional info**

Depending on the topic, other occasional courses may also be used as electives including, *BLK\_ST 380-0, AMER\_ST 310-0, ANTHRO 390-0, ASIAN\_AM 303-0, ASIAN\_AM 360-0 ASIAN\_AM 380-0, BUS\_INST 394-LK, COMM\_ST 395-0, ENVR\_SCI 390-0, GNDR\_ST 390-0, HISTORY 300-0, HUM 370-5, INTL\_ST 390-0, INTL\_ST 395-0, JWSH\_ST 390-0, LATINO 392-0, NEUROSCI 390-0, PHIL 361-0 and SOC\_POL 351-0.* For more details and an up-to-date listing of courses, consult the Global Health Studies website (<https://globalhealthstudies.northwestern.edu/courses/>) or email the program.

**Global Health Studies Minor**

Course	Title
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**Minor Requirements (7 units)**

2 core courses

All students complete:

GBL_HLTH 201-0	Introduction to Global Health <sup>1</sup>
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Plus one of the following:<sup>2</sup>

GBL_HLTH 302-0 or GBL_HLTH 320-0 or GBL_HLTH 318-0 or GBL_HLTH 303-0	Global Bioethics Qualitative Research Methods in Global Health Community-based Participatory Research Course (Re)mixing Qualitative Methods
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2 additional GBL\_HLTH courses<sup>3</sup>

3 elective courses. Elective credits can be fulfilled by pre-approved health-related courses from various departments, as listed on the GHS major page and program website. Up to two courses taken abroad can be counted as electives provided they are NU or NU-affiliated study abroad programs and the courses have been pre-approved for GHS elective credit. Study abroad courses taken that are not NU affiliated need prior approval from the DUS.

<sup>1</sup> GBL\_HLTH 301-0 (Introduction to International Public Health) from Spring 2022 or earlier may be applied in lieu of GBL\_HLTH 201-0.

<sup>2</sup> GBL\_HLTH 390-0 may be used in substitution when the topic is *Quantitative Methods: Turning Numbers into a Story*. If *Community Based Participatory Research* was completed as a topic under GBL\_HLTH 390-0 prior to Spring 2023, rather than as GBL\_HLTH 318-0, that may also be applied. So too if (Re)mixing Qualitative Methods was taken prior to Fall 2024 as a topic under GBL\_HLTH 390-0 rather than GBL\_HLTH 303-0, that may also be applied.

<sup>3</sup> GBL\_HLTH 399-0 Independent Study and courses taken abroad may not be counted toward this requirement.

**Note:**

- Students may elect to study abroad (<https://globalhealthstudies.northwestern.edu/academic-programs/study-abroad/>) as part of their Global Health Studies curriculum.

- A list of eligible elective courses can be found on the Global Health Adjunct Major (p. 326) page of this Catalog. Refer also to the Global Health Studies website for updates and occasional offerings.

## Greek

See Classics (p. 268).

## Hebrew

See Middle East and North African Languages (p. 373) and also Jewish Studies (p. 348).

## Hindi

See Asian Languages and Cultures (p. 242).

## Historical Studies

Historical Studies (FD-HS) is one of the six Foundational Disciplines that are part of the WCAS bachelor's degree.

Historical studies examine change over time in a wide variety of spheres, including beliefs, cultures, economics, intellectual thought, politics, and society. The scale and scope of offerings in this area range from the local or regional to the global, and from the origins of human society to the present day. Students learn to assess, analyze, and interpret primary and secondary sources (for example, documents, testimonies, texts, artifacts, images) and use them to develop arguments in oral and written form. Courses in historical studies teach critical methods including: evaluation of evidence, understanding conditions under which historical actors operated, comprehension of cause and consequence, tracing patterns (continuities and ruptures), comparative analysis of sources, and modes of historical argumentation.

## Learning Objectives for FD-HS

Courses in Historical Studies are designed to achieve a combination of the following learning outcomes:

- Acquire knowledge of historical phenomena (cultural, economic, intellectual, political, and social practices and their interdependent development over time in their local, regional, and/or global contexts) and become familiar with relevant primary and secondary sources
- Develop skills of historical analysis, including the means to evaluate sources; become acquainted with scholarly historical demonstration, discussion and debate
- Appreciate the impact of historical developments; acquire historical perspective on the present; consider agency and subjectivity in the context of the times; reflect on the varieties of memory and experience
- Express the results of historical investigation effectively and persuasively in written, oral and visual forms, and engage in debate with other narrators and interpreters of history, both past and present

## FD-HS Courses

Courses approved for the 2024-2025 academic year.

Course	Title
ANTHRO 318-0	Material Worlds of the Middle Ages
ANTHRO 319-0	Material Life & Culture in Europe, 1500-1800
ANTHRO 327-0	Historical Archaeology

ANTHRO 329-0	Archaeology and Nationalism
ANTHRO 370-0	Anthropology in Historical Perspective
ART 270-0	Contemporary Art Survey
ART_HIST 220-0	Introduction to African Art
ART_HIST 222-0	Black Art in the TransAtlantic World
ART_HIST 224-0	Introduction to Ancient Art
ART_HIST 225-0	Introduction to Medieval Art
ART_HIST 232-0	Introduction to the History of Architecture: 1400 to Present
ART_HIST 235-0	Introduction to Latin American Art
ART_HIST 240-0	Introduction to Asian Art
ART_HIST 250-0	Introduction to Early Modern European Art
ART_HIST 255-0	Introduction to Modernism
ART_HIST 260-0	Introduction to Contemporary Art
ART_HIST 320-1	Medieval Art: Byzantine
ART_HIST 320-3	Medieval Art: Late Medieval
ART_HIST 330-1	Early Modern European Art 1400–1500
ART_HIST 340-1	Baroque Art: Italy & Spain 1600–1800
ART_HIST 342-0	Eighteenth-Century European Art
ART_HIST 350-1	19th-Century Art 1: 1789–1848
ART_HIST 350-2	19th-Century Art 2: 1848–1914
ART_HIST 359-0	Special Topics in 19th-Century Art
ART_HIST 360-0	20th Century Art
ART_HIST 368-0	Special Topics in Modern Art
ART_HIST 378-0	The Global City
ART_HIST 386-0	Art of Africa
BLK_ST 212-1	Introduction to African-American History: Key concepts from 1700-1861
BLK_ST 212-2	Introduction to African American History: Emancipation to Civil Rights Movement
BLK_ST 213-0	History of the Black World
BLK_ST 220-0	Civil Rights and Black Liberation
BLK_ST 262-0	Introduction to Black Religions: The North American Experience
BLK_ST 315-0	Religion in the Black Atlantic
CLASSICS 211-0	Greek History and Culture: From Homer to Alexander the Great
CLASSICS 212-0	Rome: Culture and Empire
CLASSICS 260-0	Classical Mythology
CLASSICS 310-0	Archaeology of the Ancient Mediterranean
CLASSICS 311-SA	On-Site Archaeology of the Ancient Mediterranean
CLASSICS 314-0	Topics in Ancient Science and Technology
CLASSICS 320-0	Greek and Roman History
CLASSICS 321-SA	On-Site Greek and Roman History
CLASSICS 330-0	Ancient Economy
CLASSICS 380-0	Classical Reception Studies
ENGLISH 302-0	History of the English Language
ENVR_POL 251-0	The Politics of Disaster: A Global Environmental History
ENVR_POL 309-0	American Environmental History
ENVR_POL 340-0	Global Environments and World History
GBL HLTH 309-0	Biomedicine and World History
GBL HLTH 325-0	History of Reproductive Health
GERMAN 230-0	Berlin and the Culture of Democracy
GERMAN 337-0	Science and Culture in Germany
GERMAN 344-2	German History: Germany Since 1945
GERMAN 349-0	The History of the Holocaust
GNDR_ST 230-0	Traditions in Feminist Thought

GNDR_ST 321-0	Gender, Sexuality, and History	HISTORY 345-1	History of Russia, 800-1917: From Kievan Rus to the Bolshevik Revolution
GNDR_ST 324-0	US Gay and Lesbian History	HISTORY 345-2	History of Russia, 1917-1991: The Soviet Union
HISTORY 200-0	New Introductory Courses in History	HISTORY 345-3	History of Russia, 1991-Present: After Communism
HISTORY 201-1	Europe in the Medieval and Early Modern World	HISTORY 349-0	The History of the Holocaust
HISTORY 201-2	Europe in the Modern World	HISTORY 350-0	Soviet History Through Film
HISTORY 203-1	Jewish History I: 750-1492	HISTORY 351-0	Europe in the Age of Total War
HISTORY 210-1	North America and the United States to 1865	HISTORY 352-0	A Global History of Death and Dying
HISTORY 210-2	History of the United States, Reconstruction to the Present	HISTORY 353-0	History of Capitalism, 1500-1850
HISTORY 211-0	American Wars	HISTORY 354-0	History of Socialism
HISTORY 212-1	Introduction to African-American History: Key concepts from 1700-1861	HISTORY 366-0	Latin America in the Independence Era: American Indians and Nations
HISTORY 212-2	Introduction to African American History: Emancipation to Civil Rights Movement	HISTORY 367-0	History of Mexico
HISTORY 215-0	History of the American Family	HISTORY 374-0	The Arabian Peninsula Since the 18th Century
HISTORY 219-0	History of the Present	HISTORY 376-0	Global Environments and World History
HISTORY 220-0	History of the Future	HISTORY 379-0	Biomedicine and World History
HISTORY 221-0	Famous American Trials	HISTORY 381-1	Qing China
HISTORY 248-0	Global Legal History	HISTORY 381-2	Modern China: The Twentieth Century
HISTORY 249-0	The End of Citizenship	HISTORY 381-3	Modern China: Post-Mao Reforms, 1978-2016
HISTORY 250-1	Global History: Early Modern to Modern Transition	HISTORY 382-0	The Modern Japanese City
HISTORY 250-2	Global History: The Modern World	HISTORY 385-1	History of Modern South Asia, 1500-1800
HISTORY 251-0	The Politics of Disaster: A Global Environmental History	HISTORY 385-2	History of Modern South Asia, ca. 1750-present
HISTORY 253-0	A Global History of Prisons and Camps	HISTORY 386-2	Southeast Asia in the Age of Empire
HISTORY 254-0	Entrepreneurship: A Global History	HISTORY 386-3	Southeast Asia: Decolonization & Independence
HISTORY 255-1	African Civilizations	HISTORY 393-0	Approaches to History
HISTORY 255-3	Modern Africa	HISTORY 395-0	Research Seminar
HISTORY 260-2	History of Modern Latin America	HUM 211-0	Humanities in the World II
HISTORY 261-0	Sex after Shakespeare	HUM 325-4	Humanities in the Digital Age
HISTORY 263-0	Witchcraft in the Early Modern Atlantic World	HUM 329-0	Archaeology and Nationalism
HISTORY 275-1	History of Early Modern Science and Medicine	HUM 370-4	Special Topics in the Humanities
HISTORY 275-2	History of Modern Science and Medicine	JWSH_ST 280-4	Topics in Israel Studies
HISTORY 281-0	Chinese Civilization	LEGAL_ST 221-0	Famous American Trials
HISTORY 284-2	Early Modern Japan	LEGAL_ST 248-0	Global Legal History
HISTORY 286-0	World War II in Asia	LEGAL_ST 305-0	American Immigration
HISTORY 292-0	Introduction to Topics in History	LEGAL_ST 318-1	Legal and Constitutional History of the United States: Colonial Period to 1850
HISTORY 300-0	New Lectures in History	LEGAL_ST 318-2	Legal and Constitutional History of the United States: Since 1850
HISTORY 305-0	American Immigration	LEGAL_ST 347-0	Comparative Race & Ethnicity
HISTORY 309-0	American Environmental History	MENA 290-4	Introductory Topics in Middle East and North African Studies
HISTORY 310-1	Early American History: Contact and Colonization	MENA 390-4	Advanced Topics in Middle East & North African Studies
HISTORY 315-3	The United States Since 1900: Late 20th C. to Present	RELIGION 262-0	Introduction to Black Religions: The North American Experience
HISTORY 317-1	American Cultural History: 19th C.	RELIGION 264-0	American Religious History from 1865 to the Great Depression
HISTORY 318-1	Legal and Constitutional History of the United States: Colonial Period to 1850	RELIGION 265-0	American Religious History from World War II to the Present
HISTORY 318-2	Legal and Constitutional History of the United States: 1850 to Present	RELIGION 351-0	Islamic Law
HISTORY 319-0	US Foreign Relations	RELIGION 360-0	Black Religions
HISTORY 324-0	US Gay and Lesbian History	SLAVIC 250-SA	Balkan Civilizations
HISTORY 327-0	Histories of Violence in the United States	SLAVIC 390-0	History and Culture in Central and Eastern Europe
HISTORY 330-0	Medieval Sex		
HISTORY 333-0	The European Renaissance		
HISTORY 340-0	Gender, War, and Revolution in the 20th Century		
HISTORY 341-0	Paris: World City, 1700 to the Present		
HISTORY 342-1	The French Revolution and Napoleon		
HISTORY 343-0	Modern Italy		
HISTORY 344-2	German History: Germany Since 1945		

## History

history.northwestern.edu

The Department of History is a place where students can study any region of the world, during almost any historical era, from a wide variety of perspectives. The faculty includes nationally distinguished scholars in United States, European, Latin American, African, and Asian history. Faculty expertise enables the department to offer major fields of study in the history of the Americas, English/European history, African/Middle Eastern history, Asian/Middle Eastern history, and global history.

Most history courses are open to any undergraduate. Few have specific prerequisites, although first-year students are generally advised to try 100- and 200-level courses before attempting 300-level courses. History majors have priority in registering for classes, but most students enrolled in history courses are majoring in other areas. The history faculty welcomes this diversity of students.

Since all courses listed below cannot be given in any one year and the quarters in which they are offered are subject to change, see the online quarterly class schedule from the Office of the Registrar for actual offerings.

## The Teaching of History

Weinberg College students pursuing a major in history who also wish to be certified for secondary teaching must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## Programs of Study

- History Major (p. 339)
- History Minor (p. 342)

**HISTORY 101-7 College Seminar - European History (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**HISTORY 101-8 First-Year Writing Seminar - European History (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**HISTORY 102-7 College Seminar - American History (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**HISTORY 102-8 First-Year Writing Seminar - American History (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**HISTORY 103-7 College Seminar - Non-Western History (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**HISTORY 103-8 First-Year Writing Seminar - Non-Western History (1 Unit)** Small, writing and discussion-oriented course exploring a specific

topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

### **HISTORY 200-0 New Introductory Courses in History (1 Unit)**

Introductory lecture courses on topics not covered in regular offerings. Content varies. May be repeated for credit with different topic. *Historical Studies Distro Area Historical Studies Foundational Discipline*

### **HISTORY 201-1 Europe in the Medieval and Early Modern World (1 Unit)**

This course introduces majors and non-majors to the history of Europe from roughly 1000-1800. The eight centuries between the medieval Crusades and the Age of Atlantic Revolutions profoundly changed the course of Europe's history, and the world's. Topics include: the Crusades, the Black Death, the Renaissance, the Reformation, the Scientific Revolution, colonialism, slavery, and the origins of capitalism. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

### **HISTORY 201-2 Europe in the Modern World (1 Unit)**

This course examines the years from 1750 onward, when European events determined the course of world history. We will ask why Europe came to dominate the globe, considering especially industrialization, revolution, and imperial expansion. We will investigate, too, how these apparent triumphs paved the way for subsequent catastrophes, including the world wars, the Holocaust, violent decolonization, and the Cold War. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

### **HISTORY 203-1 Jewish History I: 750-1492 (1 Unit)**

Surveys the development of Jewish culture and civilization in the medieval period, and traces the ways in which Jewish culture, thought, and socio-political life developed in dialogue with contemporaneous Christian and Islamic societies. Goals include grappling with how historians use primary documents to reconstruct Jewish history, and learning to read works of historical interpretation with a careful and critical eye. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

### **HISTORY 203-2 Jewish History II: Early Modern, 1492-1789 (1 Unit)**

Jewish community's economic and cultural reshaping; legalized readmission of Jews to European cities and integration into European society. *Historical Studies Distro Area*

### **HISTORY 203-3 Jewish History III: 1789-1948 (1 Unit)**

Plurality of models of integration, acculturation, and assimilation; multiple identities; split of traditional community; sociocultural behavior; political movements. *Historical Studies Distro Area*

### **HISTORY 210-1 North America and the United States to 1865 (1 Unit)**

The setting: North America, 1400 to 1865. The characters: Indigenous, African, European, Asian, and their descendants; enslaved, free, and in-between; genders of all kinds. The plot: full of tragedy and triumph and terror and twists, including the surprising emergence of the United States, the world's first modern republican empire, trumpeting inalienable rights and the pursuit of happiness while spreading slavery. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

### **HISTORY 210-2 History of the United States, Reconstruction to the Present (1 Unit)**

Interpretative survey from the 17th century to the present. Reconstruction to the present. Lectures, discussion sections. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 211-0 American Wars (1 Unit)** This new lecture course views the United States, its peoples, and its place in the world through the prism

of war. It begins in colonial North America and continues to the present day. No prerequisites or prior knowledge are required; all students are welcome. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 212-1 Introduction to African-American History: Key concepts from 1700-1861 (1 Unit)** African origins, the slave trade, origins of slavery and racism in the United States, life under slavery in the North and the South. BLK\_ST and HISTORY 212-1 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 212-2 Introduction to African American History: Emancipation to Civil Rights Movement (1 Unit)** Emancipation to the civil rights era. Reconstruction, rise of legal segregation, strategies of resistance, migration, and urbanization. BLK\_ST 212-2 and HISTORY 212-2 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 214-0 Asian American History (1 Unit)** Introduction to the history of Asians in the United States, with a focus on their impact on American society as well as their experiences within the United States. ASIAN\_AM 214-0 and HISTORY 214-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**HISTORY 215-0 History of the American Family (1 Unit)** This course traces the evolution of family ideals and practices from pre-colonial through modern America, with a particular emphasis on the roles of gender, race, and class in shaping family experiences. *Historical Studies Distro Area Historical Studies Foundational Discipline Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 216-0 Global Asians (1 Unit)** Survey of Asian diasporas in the United States and elsewhere in the 19th and 20th centuries, emphasizing causes of migration, process of settlement, relations with other ethnic groups, and construction of diasporic identities. ASIAN\_AM 216-0 and HISTORY 216-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**HISTORY 218-0 The History of Latinas and Latinos in the United States (1 Unit)** In this course, we will explore the 500-year history of Latinos in the United States—and, indeed, across the Americas—from the 16th century through the early 21st century. In its broadest sense, Latino History offers a reinterpretation of United States history that focuses on race, migration, labor, and empire. HISTORY 218-0 and LATINO 218-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**HISTORY 219-0 History of the Present (1 Unit)** How do historians read the news? This course takes a backward approach to the study of history, beginning by identifying issues relevant to the current moment and then exploring some of the longer histories required to understand the present. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 220-0 History of the Future (1 Unit)** This course examines how the people of the past imagined their future—so we can better consider our own. We will study a range of predictive techniques: from Mesopotamian astrology to new computation methods, like climate science. And we will analyze “grand narratives” of progress, like capitalism, eugenics, and economic development. Come explore the alternative worlds of futures past. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 221-0 Famous American Trials (1 Unit)** Course explores several famous American trials to examine key themes in American political, legal, social, economic, and cultural history. We will focus largely on the twentieth century—a period of multiple “Trials of the Century”—to see how each trial crystallized broader political and social tensions over ethnicity, gender, race, religion, politics, sexuality, and social status. LEGAL\_ST 221-0 and HISTORY 221-0 are taught together; may not receive credit for both. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 248-0 Global Legal History (1 Unit)** This course examines four aspects of global legal history: 1) the imperial roots of international legal regimes and global governance; 2) the transnational history of laws on corporations and intellectual property; 3) the evolution of ideas about personhood and citizenship, including slavery, indigeneity, and artificial intelligence; and 4) the role of state borders and military monopolies. HISTORY 248-0 and LEGAL\_ST 248-0 are taught together; may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social and Behavioral Science Foundational Discipl*

**HISTORY 249-0 The End of Citizenship (1 Unit)** This course explores what makes people think, feel and act like citizens across the world and in spaces stretching from polling booths to bowling leagues. It focuses on the ends of citizenship, understood in two ways: as the goals of people who are or would be citizens, and as the processes through which those peoples’ citizenship can be terminated. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 250-1 Global History: Early Modern to Modern Transition (1 Unit)** This course traces the histories of intellectuals, sailors, enslaved laborers, peasants, pirates, soldiers, activists, and consumers who created and then transformed the early modern world. Ranging across space, illuminating integration and interconnection, it considers the antecedents of our own globalized era and also ponders the discontinuities between the early modern world and our own. No prerequisites; first-time History students welcome. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 250-2 Global History: The Modern World (1 Unit)** This course introduces the main episodes and themes of modern history. Unlike other history classes, however, its focus isn’t on a particular region or country but the whole planet. This scope gets in view large-scale phenomena such as imperialism and decolonization, technological change, the spread of communism, the two world wars, pandemics, and globalization. HISTORY 250-1 is not a prerequisite. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 251-0 The Politics of Disaster: A Global Environmental History (1 Unit)** A global survey of natural disasters over the last several centuries. Key themes include: inequality, social vulnerability, environmental racism, historical memory and forgetting, and preventability. Using disaster history to better understand and meet the present and future challenges of global climate change. HISTORY 251-0 and ENVR\_POL 251-0 are taught together; students may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 252-0 Global History of Refugees (1 Unit)** What does it mean to designate a person on the move as an “asylum seeker” or a

"refugee"? How has that label changed over time? This class examines the development of the international refugee regime in the 20th century, focusing on humanitarian aid, international and US refugee law, and activism by and on behalf of refugees. *Historical Studies Distro Area*

**HISTORY 253-0 A Global History of Prisons and Camps (1 Unit)** The course begins with a consideration of alternate forms of punishment common to the premodern era and then follows the development and spread of the modern prison and the proliferation of mass detention camps across the globe over the course of the nineteenth and twentieth centuries until the present day. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 254-0 Entrepreneurship: A Global History (1 Unit)** What can history tell us about the making of successful entrepreneurs? How has entrepreneurship shaped the modern world? Through a series of case studies, we will consider how the quest for new products and new markets helped to transform societies, economies, and environments from the 1780s through the 1950s. Topics include family firms, the search for capital, dynamics of globalization/deglobalization. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social and Behavioral Science Foundational Discipl*

**HISTORY 255-1 African Civilizations (1 Unit)** Historical approach to society, economy, polity, and culture in Africa. Agricultural origins to the 17th century. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social and Behavioral Science Foundational Discipl*

**HISTORY 255-2 Africa in the Age of Early Modern Empires (1 Unit)** Historical approach to society, economy, polity, and culture in Africa. 16th through 19th centuries. *Historical Studies Distro Area*

**HISTORY 255-3 Modern Africa (1 Unit)** How did Africans respond to European colonialism? How did they secure independence? What is neo-colonialism? How and why did society, culture, economics, politics, and intellectual life change during this time? What are the continent's challenges and strengths today? Focus on Sub-Saharan Africa with some links to North Africa and the African Diaspora, learning to interpret historical sources. No prerequisites. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 260-1 Becoming Latin America, 1492-1830 (1 Unit)** A survey of Latin America through images and primary texts, from the era of Spanish exploration and conquest through Independence (roughly 1492 to 1830), with emphasis on the experiences and sociocultural contributions of Americans, Europeans, and Africans to the region's history. Students will examine textual sources in translation, along with music, film, and especially images – maps, artwork, architecture. *Historical Studies Distro Area*

**HISTORY 260-2 History of Modern Latin America (1 Unit)** Latin America's history reaches from some of the earliest democracies to some of the most unequal societies on Earth. This course traces the big processes that shaped that history, from Patagonia to El Paso: the arrival of capitalism, the emergence of social movements, revolutions, dictatorships, dramatic environmental change, the persistence of indigenous cultures, and the politics of race. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 261-0 Sex after Shakespeare (1 Unit)** Sex in England between 1600 and 1800, concentrating on the social norms that shaped behavior.

Topics covered include shame punishments, puritanism, same-sex desire, romantic friendship, women on stage, libertinism, molly houses, and trans history. Readings include William Shakespeare, Aphra Behn, and the love letters of King James I and the duke of Buckingham. *Ethical and Evaluative Thinking Foundational Disci Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 262-0 Pirates, Guns, and Empires (1 Unit)** Piracy in the Caribbean Sea, the Atlantic Ocean, the Mediterranean Sea, the Indian Ocean, and the China Seas from the sixteenth to eighteenth centuries. Examination of notorious pirates (Blackbeard, Captain Kidd, Anne Bonny, Barbarossa, Wufeng, Zheng Yi Sao) alongside lesser-known figures. Topics covered include pirate codes, pirate mythology, pirate nests, pirate economics, and pirate hunting. *Historical Studies Distro Area*

**HISTORY 263-0 Witchcraft in the Early Modern Atlantic World (1 Unit)** This course contextualizes the deadly witch trials of the early modern era within religious, cultural, social, and economic perspectives, offering a multifaceted account of why ordinary people turned on their neighbors – a large majority of them women – and accused them of devil-worship. The class then situates modern witchcraft practices within this longer historical trajectory. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 270-0 Middle Eastern/Islamic Civilization (1 Unit)** Influence of Islam on the components of Middle Eastern societies (nomads, agrarian and urban populations) from the inception of the faith (7th century BCE) to the modern period. *Historical Studies Distro Area*

**HISTORY 271-1 History of the Islamic Middle East: 600-1200 (1 Unit)** The classical Islamic community; medieval Islamic civilization, 600-1200. *Historical Studies Distro Area*

**HISTORY 271-2 History of the Islamic Middle East: 1200-1789 (1 Unit)** Invasions from Central Asia and the empires that followed: Mamluks (Egypt), Ottomans (Turkey), and Safavids (Iran), 1200-1800. *Historical Studies Distro Area*

**HISTORY 271-3 History of the Modern Middle East, 1789 - Present (1 Unit)** Jewish and Arab nationalism, oil diplomacy, Islam in the modern context, 1789-present. *Historical Studies Distro Area*

**HISTORY 272-0 History of Ancient Egypt, 3100-c. 1000 B.C.E. (1 Unit)** The Old Kingdom: centralized government, divine kingship. The Middle Kingdom: new monarchic principles in the aftermath of social disorder. The New Kingdom: imperialism in response to foreign aggression; religious revolution of Akhenaten. *Historical Studies Distro Area*

**HISTORY 275-1 History of Early Modern Science and Medicine (1 Unit)** This course introduces students to the major transformations in scientific knowledge and medical practice in Europe and the world during the period known as the 'Scientific Revolution' (c. 1500-1800). Focus is on the social dimension of science and medicine; their links to religion, politics, commercial markets, and colonialism; and the history of unacknowledged and marginalized people in STEM. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 275-2 History of Modern Science and Medicine (1 Unit)** This course introduces students to the history of modern science and medicine from 1800 to the present day. Focus is on the revolutionary transformation wrought by science and medicine on social and political life in Europe, America, and the world. Topics include Darwinism and eugenics, clinical medicine and genomics, nuclear weapons and climate change. HISTORY 275-1 not a prerequisite. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 281-0 Chinese Civilization (1 Unit)** Chinese history to the 16th century, emphasizing cultural and intellectual history. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 282-0 Sino-American Relations in the Modern World (1 Unit)**

This course considers the bilateral Sino-American relationship in its larger global context and in connection to the issues of war, diplomacy, race, gender, religion, and material and popular culture. Focuses on the ways domestic politics shape international relations. *Historical Studies Distro Area*

**HISTORY 284-1 Ancient and Medieval Japan: From the Realm of the Gods to the Age of the Samurai (1 Unit)** Covers the social, political and economic history of Japan from the earliest evidence of civilization on the archipelago through the flourishing culture of the Kyoto court and the tumultuous age of the samurai. Students read ancient myths, Buddhist sutras, war chronicles, and the diary of a noblewoman. No prior knowledge of Japan is necessary. *Historical Studies Distro Area*

**HISTORY 284-2 Early Modern Japan (1 Unit)** This course covers social, political, and cultural developments during the Edo period. It considers the incessant drama of samurai status (including the story of the 47 loyal retainers), mercantile striving and conspicuous consumption, rural life, and the emergence of much of what we know today as "traditional Japanese culture." No prior knowledge of Japan required. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 286-0 World War II in Asia (1 Unit)** Designed for majors and non-majors, this course analyzes the major causes and vast intended and unintended effects of WWII on East and Southeast Asia and the Pacific, as well as major strategic and technological developments of the war itself. Focuses on nationalism, global history, imperialism, decolonization, fascism, Communism, democracy, and the experiences of ordinary people. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 292-0 Introduction to Topics in History (1 Unit)** Introductory seminar for non-majors and majors interested in a variety of topics related to a historical event, period, or broader historical problem. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 300-0 New Lectures in History (1 Unit)**

Lecture courses on special topics not covered in regular offerings. Content varies. May be repeated for credit with different topic.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 301-SA-1 New Lectures in History: City and Civilization in the Eastern Mediterranean World (1 Unit)** Topics in the history of the eastern Mediterranean world. Restricted to students in Northwestern's study abroad programs. *Historical Studies Distro Area*

**HISTORY 301-SA-2 New Lectures in History: Milestones of Czech History & Civilization (1 Unit)** Topics in the history of the Czech Republic. Restricted to students in Northwestern's study abroad programs.

*Historical Studies Distro Area*

**HISTORY 303-1 American Women's History, to 1865 (1 Unit)** Women and gender in American life, taking an intersectional approach to differences among women based on class, race, and ethnicity. Topics include gender and colonization, women and slavery, reproduction, women and politics. To 1865. *Historical Studies Distro Area*

**HISTORY 303-2 American Women's History, since 1865 (1 Unit)** Women and gender in American life, taking an intersectional approach and focusing on three themes: women and reproductive health, women and work, and women and social movements. Since 1865.

**HISTORY 304-0 Asian American Women's History (1 Unit)** Exploration of race, gender, and the contours of US history from the perspective of Asian American women's experiences. Considers migration, exclusion, labor, marriage, family, sexuality, and cross-racial alliances. ASIAN\_AM 304-0 and HISTORY 304-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**HISTORY 305-0 American Immigration (1 Unit)**

Themes in history of immigration, especially from Europe, Latin America, and Asia. Law, racial formation, acculturation, transnational and international contexts, competing notions of citizenship. HISTORY 305-0 and LEGAL\_ST 305-0 are taught together; may not receive credit for both courses.

Prerequisite: Course is reserved to undergraduates only.

*Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 308-0 The American West (1 Unit)** Examination of the history of the American West as both frontier and region, real and imagined, from the first contacts between Natives and colonizers in the 15th century to the multicultural encounters of the 21st century. *Historical Studies Distro Area*

**HISTORY 309-0 American Environmental History (1 Unit)** American history from precontact to the present, focusing on the role of the natural world in human history and the role of human thought and action in natural history. ENVR\_POL 309-0 and HISTORY 309-0 are taught together; may not receive credit for both courses. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 310-1 Early American History: Contact and Colonization (1 Unit)**

So much happened on the North American continent before the United States existed. This course explores those events, from before European contact through the beginning of the Seven Years' War. Moving chronologically and thematically, we will cover themes including slavery, imperialism, gender, and religion to examine how the meeting of Indigenous, European, and African peoples created new worlds for all. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 310-2 American Revolution: From British Colonies to Republican Empire (1 Unit)**

The American Revolution: a war waged by high-minded gentlemen in wigs. Or was it? This course explores the conflict in all its messy (and surprisingly manure-smeared) reality, particularly its fraught relationship to democracy, settler colonialism, human bondage, and human freedom. We'll also consider the Revolution as a touchstone in modern-day culture wars, from Supreme Court originalism to the 1619 Project.

*Historical Studies Distro Area*

**HISTORY 311-0 Democracy and its Discontents: The US from the Constitution to the Mexican War (1 Unit)** Between 1787 and 1848, the United States transformed from a precarious sliver of states to a transcontinental empire. Political participation rose alongside slavery, Indigenous expulsion, and America's first capitalist "millionaires." From immigrants and farmers to sailors and sex workers, Americans embraced religion (and alcohol) like never before, along with politics, protest, and violence. Welcome to the world's first modern democracy. *Historical Studies Distro Area*

**HISTORY 314-0 The Civil War and Reconstruction (1 Unit)** Slavery, politics, and the origins of the Civil War. Military mobilization, emancipation, and the challenges of setting the nation on a new footing after the war, including social history in the former Confederacy, federal

civil rights policies, and reactionary backlash. *Historical Studies Distro Area*

**HISTORY 315-1 The United States Since 1900: Early 20th C. (1 Unit)**  
America's domestic history and role in world affairs since 1900. Early 20th century.

*Historical Studies Distro Area*

**HISTORY 315-2 The United States Since 1900: Mid-20th C. (1 Unit)**  
America's domestic history and role in world affairs since 1900. Mid-20th century.

*Historical Studies Distro Area*

**HISTORY 315-3 The United States Since 1900: Late 20th C. to Present (1 Unit)**

America's domestic history and role in world affairs since 1900. Late 20th century to the present.

*Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 316-0 The Sixties (1 Unit)** Examination of one of the most tumultuous eras in US history, its roots in the reshaping of American society after World War II, and its legacies for the present. Emphasis on social movements of the period, particularly the civil rights movement, and political and cultural change. *Historical Studies Distro Area*

**HISTORY 317-1 American Cultural History: 19th C. (1 Unit)**

Changing values of the American people, how they have been transmitted, and how they have shaped American society, politics, and the economy. 19th century.

*Historical Studies Distro Area Historical Studies Foundational Discipline Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 317-2 American Cultural History: 20th C. to Present (1 Unit)**

Changing values of the American people, how they have been transmitted, and how they have shaped American society, politics, and the economy. 20th century to the present.

*Historical Studies Distro Area*

**HISTORY 318-1 Legal and Constitutional History of the United States: Colonial Period to 1850 (1 Unit)**

Colonial period-1850. Development of legal institutions, constitutionalism, law and social change, law and economic development. Taught with *LEGAL\_ST 318-1*; may not receive credit for both courses.

*Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 318-2 Legal and Constitutional History of the United States: 1850 to Present (1 Unit)**

1850-present. Law in industrial society: administration, race relations, corporations, environmental protection, civil liberties. Taught with *LEGAL\_ST 318-2*; may not receive credit for both courses.

*Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 319-0 US Foreign Relations (1 Unit)** The United States has been since 1945 the most powerful country on the planet. This course considers its rise and asks how it came to be the sort of world power it is. This is not merely a history of wars and diplomacy, but also of ideas, social movements, technologies, and markets, both inside and outside of U.S. borders. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 320-0 The Fourteenth Amendment (1 Unit)** The Fourteenth Amendment's role in defining and protecting citizenship, privileges

and immunities, due process, and equal protection from its nineteenth-century origins to the present. HISTORY 320-0 and *LEGAL\_ST 320-0* are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**HISTORY 321-0 The Vietnam Wars (1 Unit)** Analysis of Vietnam's wars for national independence, with emphasis on US involvement. Topics include international context, political rationales, military engagements, popular attitudes, cultural exchange, human costs, and lasting legacies. *Historical Studies Distro Area*

**HISTORY 322-1 Development of the Modern American City: to 1880 (1 Unit)**

City characteristics of urban society in America from the period of settlement to the present. To 1880.

*Historical Studies Distro Area*

**HISTORY 322-2 Development of the Modern American City: 1880-Present (1 Unit)**

City characteristics of urban society in America from the period of settlement to the present. 1880-present.

*Historical Studies Distro Area*

**HISTORY 324-0 US Gay and Lesbian History (1 Unit)**

Gender, sexuality, and the rise of modern lesbian and gay identities.

**HISTORY 324-0 and GNDR\_ST 324-0** are taught together; may not receive credit for both courses.

*Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 325-0 History of American Technology (1 Unit)**

This course studies American history through material artifacts. From colonialism to Silicon Valley, America has been a site of technological change. Topics include slavery and mechanization; industrialization and its discontents; consumer culture and household technology; social media and democratic upheaval; biotech and the digital revolution. Students write the social history of an artifact of their choice. No prerequisites.

*Historical Studies Distro Area*

**HISTORY 326-0 U.S. Intellectual History (1 Unit)** Central questions in America's intellectual past from the colonial era forward; specific dates vary by instructor. *Historical Studies Distro Area*

**HISTORY 327-0 Histories of Violence in the United States (1 Unit)** The story of the United States is built on the inclusion or omission of violence: from the genocide of Native Americans to slavery to imperial conquest, from "private" pain of women to the nationalized pain of soldiers. This lecture course brings violence to the center of U.S. history from Early America to the present. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**HISTORY 330-0 Medieval Sex (1 Unit)** Fluidity of sex and gender roles in an age before "sexual orientation"; impact of and resistance to Christian theology's negative assessment of sexuality; the cult of chastity. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 331-0 Women in Medieval Society (1 Unit)** Examination of medieval women's lives in both secular and religious spheres through the different ideologies (religious, philosophical, scientific) that shaped them. *Historical Studies Distro Area*

**HISTORY 332-1 Medieval Europe I: Early Middle Ages, 300-1000 (1 Unit)**  
Early Middle Ages, 300-1000.

*Historical Studies Distro Area*

**HISTORY 332-2 Medieval Europe II: High & Late Middle Ages, 1000-1450 (1 Unit)**

High and Late Middle Ages, 1000-1450.

*Historical Studies Distro Area*

**HISTORY 333-0 The European Renaissance (1 Unit)**

In 1348, a third to a half of all Europeans died from the Black Death, which was just one of many calamities, including the near total collapse of international trade and devastating wars that disrupted normal life. In the wake of these disasters, writers and artists began to search for explanations, creating the Renaissance.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 334-0 The Reformation of Religion (1 Unit)**

A history of the Protestant and Catholic Reformations of the sixteenth century. Topics include theological controversies, religious radicalism, the role of women in the Reformation, formation of confessions, the witch craze, religious wars, religion and ritual, and the origins of religious toleration.

*Historical Studies Distro Area*

**HISTORY 336-0 Spain 1500 - 1700: Rise and Fall of a European Empire (1 Unit)**

Social, political, and economic history of the largest early-modern European empire, its multicultural genesis, rise to domination in Europe and the Americas, and struggle to integrate internally. *Historical Studies Distro Area*

**HISTORY 337-0 History of Modern Europe (1 Unit)**

Survey of the political and social history of Europe between 1815 and 1945, with emphasis on the political integration and disintegration of the Continent and the causes and effects of social and economic change. *Historical Studies Distro Area*

**HISTORY 338-1 Europe in the 20th Century, 1900-1945 (1 Unit)**

The development of Europe in the first half of the twentieth century: modern art and culture, the First World War and the Russian Revolutions, the collapse of monarchial empires in Europe and challenges to colonies abroad, mass politics and the rise of nation-states, socialist and fascist movements, women's and minority rights, the Second World War and the Holocaust.

*Historical Studies Distro Area*

**HISTORY 338-2 Europe in the 20th Century, 1945-Present (1 Unit)**

The development of Europe from the Second World War to the present: the Cold War, the rise of the welfare state, the expansion and collapse of the Soviet empire, decolonization and its legacy, European integration and disintegration, immigration and diversity, new political movements, including environmentalism, feminism, terrorism, and the revival of nationalist authoritarianism. HISTORY 338-1 is not a prerequisite.

*Historical Studies Distro Area*

**HISTORY 340-0 Gender, War, and Revolution in the 20th Century (1 Unit)**

Examination of changes in gender ideals and in the lives of women and men in Europe and America as a result of world wars, Russian revolution, fascism, and the Cold War. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 341-0 Paris: World City, 1700 to the Present (1 Unit)**

Survey of the social, cultural, political, economic, and spatial development of Paris from aristocratic enclave to a class-divided bourgeois city, from an imperial capital to a postcolonial metropolis. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 342-1 The French Revolution and Napoleon (1 Unit)**

The social, political and cultural origins of the French Revolution including the culture and politics of the French Enlightenment. The

outbreak and radicalization of the Revolution, culminating in the Reign of Terror. The Haitian Revolution in relation to developments in France. The rise and career of Napoleon Bonaparte. Political and historiographical debates over the meaning of the Revolution.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 342-2 History of Modern France: 19th c. to present (1 Unit)**

France from the late nineteenth-century to the present. The politics and culture of fin-de-siècle France including the Dreyfus Affair and empire. The French experience in World War I, the defeat of 1940, the German occupation, France's role in the Holocaust. Decolonization and the Algerian War. Postwar political, social and cultural developments leading to current problems around immigration, race, and gender.

*Historical Studies Distro Area*

**HISTORY 343-0 Modern Italy (1 Unit)**

Italy from the Enlightenment to the present, concentrating on the movement for unification, the world wars, Mussolini and fascism, the postwar economic miracle, and terrorism.

*Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 344-1 German History: Weimar and Nazi Germany (1 Unit)**

Survey of German political, economic, social, intellectual, and diplomatic history covering Weimar and Nazi Germany. Prerequisite: None.

GERMAN 344-1 and HISTORY 344-1 are taught together: may not receive credit for both courses. *Historical Studies Distro Area*

**HISTORY 344-2 German History: Germany Since 1945 (1 Unit)**

Survey of German political, economic, social, intellectual, and diplomatic history covering Germany beginning in 1945 to reunification at the end of the Cold War. Prerequisite: None. GERMAN 344-2 and HISTORY 344-2 are taught together; may not receive credit for both courses. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 345-1 History of Russia, 800-1917: From Kievan Rus to the Bolshevik Revolution (1 Unit)**

This course explores the history of Russia from its origins in Kievan Rus to the dawn of the Soviet period. Major themes include the rise and expansion of the Russian Imperial state; serfdom and emancipation; religious and ethnic diversity; and major developments in the arts and sciences. Course readings include memoirs, poetry, and hagiography as well as recent historical scholarship.

*Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 345-2 History of Russia, 1917-1991: The Soviet Union (1 Unit)**

This course explores the history of the Soviet Union from its beginnings after the revolutions of 1917 to its collapse in 1991. Special topics will include Lenin and the Bolsheviks; the rise and rule of Stalin; the Great Terror; the Second World War; the "Thaw"; the Cold War; and the dawn of the post-Soviet era. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 345-3 History of Russia, 1991-Present: After Communism (1 Unit)**

This class explores Russia from the end of the Soviet period to the "Age of Putin." Topics include the decline and fall of the Soviet Union; the rise and rule of Putin; the emergence of Russia's "oligarch" class; the wars in Ukraine, Chechnya, and the Caucasus; and Russia's relations with the United States, the European Union, China, and Central Asia. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 346-0 East Central Europe under Communist Rule and Beyond, 1945 to the Present (1 Unit)**

The history of East-Central Europe from the World War II to the collapse of Soviet rule and beyond. *Historical Studies Distro Area*

**HISTORY 347-0 Christians and Jews (1 Unit)**

Varieties of historical encounters between Jews and Christians. Origins of the "Jesus

movement"; rabbinic attitudes toward Christianity; medieval polemic and engagement; the modern "Judeo-Christian tradition"; Christian Zionism and postwar ecumenicism. *Historical Studies Distro Area*

**HISTORY 348-1 Jews in Poland, Ukraine, and Russia (1 Unit)** Social, political, religious, and cultural interaction of Jews and Slavs over a millennium, 1250-1917. *Historical Studies Distro Area*

**HISTORY 348-2 Jews in Poland, Ukraine, and Russia (1 Unit)** Jewish encounter with Marxism and communism; social, political, cultural, and artistic aspects of Jewish life; Soviet Jews and the Russian empire: patterns of survival, accommodation, and interaction, 1917-2014. *Historical Studies Distro Area*

**HISTORY 349-0 The History of the Holocaust (1 Unit)** Origins and development of the genocide of European Jewry during World War II. Prerequisite: none. HISTORY 349-0 and GERMAN 349-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 350-0 Soviet History Through Film (1 Unit)** The story of Soviet cinema is one of the most remarkable artistic "underdog" tales of modern times: in a country where freedom of expression was severely curtailed, Soviet filmmakers found ways to craft some of the greatest films ever made. This class takes students on a cinematic journey through Soviet history. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**HISTORY 351-0 Europe in the Age of Total War (1 Unit)** The French Revolution of 1789 created a new form of warfare: a total mobilization of ordinary citizens into mass armies fighting in the name of national glory and survival. We will trace total war from 1789 to World War II, making comparisons to the colonial wars that Europeans simultaneously pursued as global extensions of the political claims of the nation. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 352-0 A Global History of Death and Dying (1 Unit)** How death has shaped human history. Ranging from the earliest archaeological record to today, we will focus on the changing meanings of death and changing realities of death and dying. Religions, slave trades, imperial conquests, pandemics, wars, medicine, nutrition, life expectancy. The psychology of death and dying, personal and social meanings of death, and the future of death. No prerequisites. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216)*

**HISTORY 353-0 History of Capitalism, 1500-1850 (1 Unit)** What is capitalism? Why did it begin? How has it reordered human societies? As we evaluate competing answers to these questions, we will investigate ongoing debates on issues including: the ultimate source of wealth; the cultural, political and personal consequences of marketization, commodification and consumerism; the formation and stratification of social classes; and the forces that drive economic globalization. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 354-0 History of Socialism (1 Unit)** This course investigates socialism from its origins during the Age of Revolutions in Europe to follow its global development up to the present. Socialism will be studied

as an oppositional movement against the capitalist world economy, as a critical analysis of capitalist society, and as an attempt to establish a new kind of human community based on that critique. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 356-1 History of South Africa, Early Times to 1879 (1 Unit)**

From the African iron age to the establishment of the multinational gold mining industry, emphasizing the rise of African states and the contest for land with white settlers.

*Historical Studies Distro Area*

**HISTORY 356-2 History of South Africa, 1879-on (1 Unit)**

Emphasis on the 20th century, the rise of African nationalism, and the clash with the apartheid state.

*Historical Studies Distro Area*

**HISTORY 357-0 East Africa (1 Unit)**

Selected topics in East African history.

*Historical Studies Distro Area*

**HISTORY 358-0 Topics in West African History (1 Unit)** Selected topics in West African history: economy, society, and government. *Historical Studies Distro Area*

**HISTORY 360-0 Tudor and Stuart Britain (1 Unit)** Formation of the British state during the sixteenth and seventeenth centuries, with emphasis on changing patterns of religious belief and the ascendancy of parliament. Topics covered include warfare, popular politics, court culture, confessional conflict and martyrdom. Sources include writings by Queen Elizabeth, King James I and William Shakespeare. *Historical Studies Distro Area*

**HISTORY 362-1 Modern British History, 1688 - 1815 (1 Unit)**

Social, political, and institutional history, 1688-1815.

*Historical Studies Distro Area*

**HISTORY 362-2 The Victorians: liberalism, empire, and morality, 1780-1900 (1 Unit)**

This course explores how and why Victorian Britain became the most powerful nation in the world. We will investigate its remarkable political stability; examine its industrial expansion and urbanization; explore its trademark philosophy, liberalism; chart the expansion of empire; and ask what it meant to be a Victorian, whether poor or rich, male or female, notorious or forgotten.

*Historical Studies Distro Area*

**HISTORY 362-3 Britain since 1900: The Decline and Fall of Empire (1 Unit)**

In 1900, Britain was the greatest power in the world. Why did the British empire end? And was Britain's decline inevitable? Among the subjects we'll explore are the effects of the two world wars, decolonization and immigration, state expansion, mass culture, and Britain's relation to Europe and the United States.

*Historical Studies Distro Area*

**HISTORY 364-0 Gender and Sexuality in Victorian Britain (1 Unit)** Key debates and issues: prostitution, the city and sexual crime, sexuality and empire, sex and the single woman, homosexuality on trial, and the "scientific" writings of Victorian sexologists. *Historical Studies Distro Area*

**HISTORY 365-0 Medicine in Latin America: From Chocolate to Che Guevara (1 Unit)**

Introduction to the history of medicine in the Americas from precontact to the present, with special focus on Latin America and the Caribbean in imperial, transnational, and global frameworks.

*Historical Studies Distro Area*

**HISTORY 366-0 Latin America in the Independence Era: American Indians and Nations (1 Unit)**

A thematic survey of independence in Latin America, with emphasis on the experiences of Native Americans. Independence from Spain only intensified debates about race, citizenship, and nation. What role would American civilizations, cultures, languages, and histories play in forging national identities? What has citizenship meant for indigenous people in the region?

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 367-0 History of Mexico (1 Unit)** The history of Mexico, told through multiple media, from the fall of the Aztec Empire in 1521 to the War on Drugs in 2021. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*
**HISTORY 368-2 Revolutions in Latin America and the Caribbean from Haiti to Mexico (1 Unit)**

Revolutions have changed peoples' worlds across Latin America since the beginning of modern history. In Haiti a slave revolution ushered in a Black republic; in Mexico a peasant revolution founded one of the most enduring one-party states; in Cuba a guerrilla revolution created the only surviving Communist state in the Americas. This course traces why and how they happened.

*Historical Studies Distro Area*

**HISTORY 369-0 Development and Inequality in Modern Latin America (1 Unit)**

Examination of various models of economic development that have been implemented in 20th-century Latin America, exploring the cultural, social, political, and economic roots of such policies and their impact on the region's poorest and most marginalized populations.

*Historical Studies Distro Area*

**HISTORY 370-0 Music and Nation in Latin America (1 Unit)** This course takes a sonorous trip through Latin America and the Caribbean to explore music's centrality to the formation of nations and states. We address national genres (Brazilian samba, Argentine tango, Cuban son, Mexican corrido) as well as transnational ones (salsa, cumbia, reggaeton), drawing from history, anthropology, journalism, and ethnomusicology. We also analyze lyrics, music videos, and films. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*
**HISTORY 373-1 The Last Empire of Islam: The Ottomans in Europe and Asia in the Early Modern Era (1 Unit)** The Ottoman Empire once ruled over a territory that encompassed Southeast Europe, North Africa, and the region we now refer to as the "Middle East." This course explores the transformation of the Ottoman state from a small principality at the borderlands of the East Roman Empire to an empire in its own right by the sixteenth century. *Historical Studies Distro Area*
**HISTORY 373-2 The Ottoman Empire in the Age of Nationalism: From "Grand Signor" to the "Sick Man of Europe" (1 Unit)** The combined territories of a score of contemporary nation states in Europe, Asia, and North Africa once comprised the Ottoman Empire. In all these countries (including Turkey), the Ottoman centuries present a complicated legacy often read through the contemporary lens of nationalist ideology. This course explores the historical background of the troubled relationship between the Ottoman Empire and its descendants. *Historical Studies Distro Area*
**HISTORY 374-0 The Arabian Peninsula Since the 18th Century (1 Unit)** This course aims at introducing students to the history of modern states

in the Arabian Peninsula, which is an often neglected but increasingly pivotal region of the Middle East. Although Saudi Arabia will receive particular attention, the course will also cover the smaller emirates of the Persian Gulf (Kuwait, Bahrain, Qatar, the UAE and Oman) as well as Yemen. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 376-0 Global Environments and World History (1 Unit)**

The planet's life support systems are at risk. This introductory course explores the recent histories of big environmental problems around the world, including industrialization, toxic contaminants, climate change, extractive economies, intercontinental warfare, and energy regimes. ENVR\_POL 340-0 and HISTORY 376-0 are taught together; may not receive credit for both courses. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 378-0 History of Law and Science (1 Unit)**

This class introduces students to the evolving relationship between science and justice in the American and European legal traditions over the past 300 years. Topics include changing standards of evidence and proof; the forensic sciences and the rise of the jury system; identification from fingerprinting to DNA; and intellectual property law in biotech and the digital economy. No prerequisites. *Historical Studies Distro Area*

**HISTORY 379-0 Biomedicine and World History (1 Unit)** Course covers four centuries, focusing especially on the power of disease and the limits of global health governance. Subjects include how different medical professions became dominant, why drug industries secured monopolies, and what effects these changes had on other medical cultures. GBL\_HLTH 309-0 and HISTORY 379-0 are taught together; may not receive credit for both courses. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*
**HISTORY 381-1 Qing China (1 Unit)**

Survey of Chinese history from the rise of the last dynasty (the Qing) to the Revolution of 1911 and the inauguration of the Republic of China. Explores the transition from the "traditional" to the "modern" era and considers the transformation of social, economic, cultural, and international relations.

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 381-2 Modern China: The Twentieth Century (1 Unit)**

Survey of Chinese history from the Revolution of 1911 to the era of post-Mao reform. Course explores the political, social, cultural, and international challenges confronting China under the Republic of China (1912-1949) and the early People's Republic of China after 1949.

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 381-3 Modern China: Post-Mao Reforms, 1978-2016 (1 Unit)** Examines the complex transformations unleashed by China's economic reforms from the late 1970s until the early 21st century. Topics include arguments about the unevenness and morality of socio-economic change, the 1989 Spring Democracy Movement, China's "Peaceful Rise," the AIDS crisis and SARS, the crisis of unemployment and public welfare, the environmental movement, and China's growing participation in global affairs. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*
**HISTORY 382-0 The Modern Japanese City (1 Unit)** The Japanese city is the main site of Japanese modernity, and all its pleasures and dangers.

This course introduces students to the ways Japanese urbanites experienced their lives. Like other urbanites around the world, they sought an indigenous modernity but have never agreed on what that might entail, an enduring conflict that has long sparked enormous cultural ferment. No prerequisites. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 383-0 Japan's Modern Revolution (1 Unit)** This course explores Japan's emergence as a modern power in the nineteenth century, including the difficult transition from samurai rule to constitutional monarchy; the creation of modern banks, railroads, textile factories, and mining operations; and the transformation from early modern state to imperial power. Subjects include ex-samurai, factory girls, soldiers, tenant farmers, miners, and colonial subjects in Taiwan and Korea. *Historical Studies Distro Area*

**HISTORY 384-1 History of Modern Japan: The Modern State, 1860-1943 (1 Unit)**

Japan: the modern state, 1860-1943.  
*Historical Studies Distro Area*

**HISTORY 384-2 History of Modern Japan: War and postwar Japan, 1943-present (1 Unit)**

After defeat in WWII, a devastated Japan quickly became the world's second-largest economy, not to mention the sophisticated society and fascinating culture well-known around the world today. Japan's distinctive mix of achievements and challenges provides thought-provoking opportunities to analyze the range of ways modern people have organized their policies and daily lives. No prerequisites.

*Historical Studies Distro Area*

**HISTORY 385-1 History of Modern South Asia, 1500-1800 (1 Unit)**

The early modern period, ca. 1500-1800: The Mughal Empire; the early phase of European trade and conquest in the subcontinent.

*Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 385-2 History of Modern South Asia, ca. 1750-present (1 Unit)**

ca. 1750-present: The age of British colonial dominance; the politics of nation building and anticolonial resistance; independence, partition, and the postcolonial predicament.

*Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 386-2 Southeast Asia in the Age of Empire (1 Unit)** The history of Southeast Asia in the age of European high imperialism, c. 1750-1945.

The course examines structures of colonial rule; environmental transformation; urbanization and the making of the countryside; inter-Asian migration; the formation of new Southeast Asian elites; the transformation of Buddhism and Islam; the impact of the Great Depression; peasant rebellions; and the birth of communism, among other topics. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 386-3 Southeast Asia: Decolonization & Independence (1 Unit)** The history of decolonization and independence in Southeast Asia including: the Japanese occupation; the Indonesian and Vietnamese revolutions; the Vietnam War; the Pol Pot regime; the Laos Civil War; the Malayan Emergency; the 1965 mass murder of the Indonesian Left; Martial Law in the Philippines; the civil war in Myanmar; murdered

Thai monarchs and more. *Advanced Expression Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HISTORY 393-0 Approaches to History (1 Unit)** Introductory seminar for history majors and others interested in understanding how history is thought about and written. Intensive exploration of a significant historical event, period, or topic. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 395-0 Research Seminar (1 Unit)** Students research and complete a term paper on a topic of choice. Required of majors. *Advanced Expression Historical Studies Distro Area Historical Studies Foundational Discipline*

**HISTORY 398-1 Thesis Seminar (1 Unit)** Advanced work through supervised reading, research, and discussion. Admission by written application, to be reviewed by department. Grade of K given in 398-1 and 398-2. *Advanced Expression*

**HISTORY 398-2 Thesis Seminar (1 Unit)** Advanced work through supervised reading, research, and discussion. Admission by written application, to be reviewed by department. Grade of K given in 398-1 and 398-2. *Advanced Expression*

**HISTORY 398-3 Thesis Seminar (1 Unit)** Advanced work through supervised reading, research, and discussion. Admission by written application, to be reviewed by department. Grade of K given in 398-1 and 398-2. *Advanced Expression*

**HISTORY 399-0 Independent Study (1 Unit)** Reading and conferences on special subjects for advanced undergraduates. Open only with consent of director of undergraduate studies and instructor.

**HISTORY 399-SA Independent Study (1 Unit)** Reading and conferences on special subjects for advanced undergraduates. Open only with consent of director of undergraduate studies and instructor.

## History Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The history major enables students to broaden their intellectual horizons as they study the experiences of people in times and places other than their own. Courses are designed to develop the ability to read insightfully, think critically, and write with precision and polish. Students enroll in a range of historical courses as well as develop an area of concentration. Majors are each assigned a faculty adviser with whom they are encouraged to consult frequently.

Students majoring in history select one of five concentrations and may arrange to emphasize special fields within their concentration:

- History of the Americas
- English/European history
- African/Middle Eastern history
- Asian/Middle Eastern history
- Global history

The program for majors consists of 12 graded courses in history, none of which may be substituted by advanced placement credits. These courses, chosen by the student with the adviser, are distributed as follows.

Course	Title
<b>Major Requirements (12 units)</b>	
2 undergraduate seminars:	
HISTORY 393-0	Approaches to History (taken as soon as possible after declaring the history major)
HISTORY 395-0 Research Seminar	
10 additional 200- or 300-level courses:	
For nonglobal history concentrations:	
6 courses in a geographic concentration; see department website for eligible courses. 1 only allowed from:	
HISTORY 101-7	College Seminar - European History
or HISTORY 101-8	First-Year Writing Seminar - European History
or HISTORY 102-7	College Seminar - American History
or HISTORY 102-8	First-Year Writing Seminar - American History
or HISTORY 103-7	College Seminar - Non-Western History
or HISTORY 103-8	First-Year Writing Seminar - Non-Western History
4 courses outside the geographic concentration	
For global history concentration:	
HISTORY 250-1 & HISTORY 250-2	Global History: Early Modern to Modern Transition and Global History: The Modern World
2 additional global history courses (see department website for eligible courses)	
6 courses outside global history, either 2 each in three geographic areas or 3 each in 2 geographic areas	
At least 2 of the 12 courses must be in fields other than modern European or US history (e.g., courses in European history before 1800 or in African, Asian, Middle Eastern, or Latin American history in any period).	

## Honors in History

Junior majors with strong academic records and an interest in pursuing honors attend informational sessions during winter quarter. They submit a thesis proposal and a letter of recommendation from a Northwestern history professor by an early spring deadline. Those chosen enroll as seniors in a 3-quarter thesis seminar (HISTORY 398-1, HISTORY 398-2, HISTORY 398-3) and submit a completed thesis in May. All 3 thesis seminar quarters (HISTORY 398-1, HISTORY 398-2, HISTORY 398-3) may count toward the major; see the department for details.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the director of undergraduate studies and see Honors in the Major (p. 222).

## History Courses

### Introductory Seminars

The following 3 courses are first-year seminars, each limited to 15 undergraduates, which introduce students to modes of historical analysis through the study of various topics in history. Specific subjects will be listed in the *Class Schedule*. Open to first-year students only.

Course	Title
HISTORY 101-7	College Seminar - European History
HISTORY 102-7	College Seminar - American History
HISTORY 103-7	College Seminar - Non-Western History

### Introductory Lecture Courses

Course	Title
HISTORY 200-0	New Introductory Courses in History
HISTORY 300-0	New Lectures in History

HISTORY 301-SA-1 & HISTORY 301-SA-2	New Lectures in History: City and Civilization in the Eastern Mediterranean World and New Lectures in History: Milestones of Czech History & Civilization
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## African History Courses

Course	Title
HISTORY 255-1 & HISTORY 255-2 & HISTORY 255-3	African Civilizations and Africa in the Age of Early Modern Empires and Modern Africa
HISTORY 356-1 & HISTORY 356-2	History of South Africa, Early Times to 1879 and History of South Africa, 1879-on
HISTORY 357-0	East Africa
HISTORY 358-0	Topics in West African History

## Asian History Courses

Course	Title
HISTORY 281-0	Chinese Civilization
HISTORY 284-1 & HISTORY 284-2	Ancient and Medieval Japan: From the Realm of the Gods to the Age of the Samurai and Early Modern Japan
HISTORY 286-0	World War II in Asia
HISTORY 381-1 & HISTORY 381-2	Qing China and Modern China: The Twentieth Century
HISTORY 382-0	The Modern Japanese City
HISTORY 383-0	Japan's Modern Revolution
HISTORY 384-1 & HISTORY 384-2	History of Modern Japan: The Modern State, 1860-1943 and History of Modern Japan: War and postwar Japan, 1943-present
HISTORY 385-1 & HISTORY 385-2	History of Modern South Asia, 1500-1800 and History of Modern South Asia, ca. 1750-present

## England and the British Isles History Courses

Course	Title
HISTORY 261-0	Sex after Shakespeare
HISTORY 360-0	Tudor and Stuart Britain
HISTORY 362-1 & HISTORY 362-2 & HISTORY 362-3	Modern British History, 1688 - 1815 and The Victorians: liberalism, empire, and morality, 1780-1900 and Britain since 1900: The Decline and Fall of Empire
HISTORY 364-0	Gender and Sexuality in Victorian Britain

## European History Courses

Course	Title
HISTORY 201-1 & HISTORY 201-2	Europe in the Medieval and Early Modern World and Europe in the Modern World
HISTORY 203-1 & HISTORY 203-2 & HISTORY 203-3	Jewish History I: 750-1492 and Jewish History II: Early Modern, 1492-1789 and Jewish History III: 1789-1948
HISTORY 330-0	Medieval Sex
HISTORY 331-0	Women in Medieval Society
HISTORY 332-1 & HISTORY 332-2	Medieval Europe I: Early Middle Ages, 300-1000 and Medieval Europe II: High & Late Middle Ages, 1000-1450
HISTORY 333-0	The European Renaissance
HISTORY 334-0	The Reformation of Religion
HISTORY 336-0	Spain 1500 - 1700: Rise and Fall of a European Empire
HISTORY 337-0	History of Modern Europe

HISTORY 338-1 & HISTORY 338-2	Europe in the 20th Century, 1900-1945 and Europe in the 20th Century, 1945-Present	HISTORY 218-0	The History of Latinas and Latinos in the United States
HISTORY 340-0	Gender, War, and Revolution in the 20th Century	HISTORY 303-1 & HISTORY 303-2	American Women's History, to 1865 and American Women's History, since 1865
HISTORY 341-0	Paris: World City, 1700 to the Present	HISTORY 304-0	Asian American Women's History
HISTORY 342-1 & HISTORY 342-2	The French Revolution and Napoleon and History of Modern France: 19th c. to present	HISTORY 305-0	American Immigration
HISTORY 343-0	Modern Italy	HISTORY 308-0	The American West
HISTORY 344-1	German History: Weimar and Nazi Germany	HISTORY 309-0	American Environmental History
HISTORY 344-2	German History: Germany Since 1945	HISTORY 310-1 & HISTORY 310-2	Early American History: Contact and Colonization and American Revolution: From British Colonies to Republican Empire
HISTORY 345-1 & HISTORY 345-2 & HISTORY 345-3	History of Russia, 800-1917: From Kievan Rus to the Bolshevik Revolution and History of Russia, 1917-1991: The Soviet Union and History of Russia, 1991-Present: After Communism	HISTORY 311-0	Democracy and its Discontents: The US from the Constitution to the Mexican War
HISTORY 346-0	East Central Europe under Communist Rule and Beyond, 1945 to the Present	HISTORY 314-0	The Civil War and Reconstruction
HISTORY 347-0	Christians and Jews	HISTORY 315-1 & HISTORY 315-2 & HISTORY 315-3	The United States Since 1900: Early 20th C. and The United States Since 1900: Mid-20th C. and The United States Since 1900: Late 20th C. to Present
HISTORY 348-1 & HISTORY 348-2	Jews in Poland, Ukraine, and Russia and Jews in Poland, Ukraine, and Russia	HISTORY 316-0	The Sixties
HISTORY 349-0	The History of the Holocaust	HISTORY 317-1 & HISTORY 317-2	American Cultural History: 19th C. and American Cultural History: 20th C. to Present

## Global History Courses

Course	Title
HISTORY 250-1 & HISTORY 250-2	Global History: Early Modern to Modern Transition and Global History: The Modern World
HISTORY 251-0	The Politics of Disaster: A Global Environmental History
HISTORY 352-0	A Global History of Death and Dying

## Latin American History Courses

Course	Title
HISTORY 260-1 & HISTORY 260-2	Becoming Latin America, 1492-1830 and History of Modern Latin America
HISTORY 366-0	Latin America in the Independence Era: American Indians and Nations
HISTORY 369-0	Development and Inequality in Modern Latin America

## Middle Eastern History Courses

Course	Title
HISTORY 270-0	Middle Eastern/Islamic Civilization
HISTORY 271-1	History of the Islamic Middle East: 600-1200
HISTORY 271-2	History of the Islamic Middle East: 1200-1789
HISTORY 271-3	History of the Modern Middle East, 1789 - Present
HISTORY 272-0	History of Ancient Egypt, 3100-c. 1000 B.C.E.
HISTORY 373-1 & HISTORY 373-2	The Last Empire of Islam: The Ottomans in Europe and Asia in the Early Modern Era and The Ottoman Empire in the Age of Nationalism: From "Grand Signor" to the "Sick Man of Europe"

## United States History Courses

Course	Title
HISTORY 210-1 & HISTORY 210-2	North America and the United States to 1865 and History of the United States, Reconstruction to the Present
HISTORY 212-1 & HISTORY 212-2	Introduction to African-American History: Key concepts from 1700-1861 and Introduction to African American History: Emancipation to Civil Rights Movement
HISTORY 214-0	Asian American History
HISTORY 216-0	Global Asians

## History of Science and Technology Courses

Course	Title
HISTORY 275-1 & HISTORY 275-2	History of Early Modern Science and Medicine and History of Modern Science and Medicine
HISTORY 325-0	History of American Technology
HISTORY 376-0	Global Environments and World History
HISTORY 378-0	History of Law and Science
HISTORY 379-0	Biomedicine and World History

## Intermediate and Advanced Seminars

Course	Title
HISTORY 393-0	Approaches to History
HISTORY 395-0	Research Seminar
HISTORY 398-1 & HISTORY 398-2 & HISTORY 398-3	Thesis Seminar and Thesis Seminar and Thesis Seminar
HISTORY 399-0	Independent Study

## History Courses in Other Departments

A history major may take no more than 2 courses listed below to satisfy the 12-course history requirement.

Course	Title
CLASSICS 211-0	Greek History and Culture: From Homer to Alexander the Great
CLASSICS 212-0	Rome: Culture and Empire
ECON 315-0	Topics in Economic History

ECON 318-0	History of Economic Thought
ECON 323-1	Economic History of the United States Before 1865
ECON 323-2	Economic History of the United States 1865 to Present
ECON 324-0	Western Economic History
LATINO 218-0	Latino History
RELIGION 264-0	American Religious History from 1865 to the Great Depression
RELIGION 265-0	American Religious History from World War II to the Present

## History Minor

The minor in history encourages students majoring in other fields to study history and to organize their historical studies in a coherent way. The structure of the minor requires students to gain both depth and breadth in history. Students must select a concentration, which enables them to acquire significant knowledge of one area of the world and take courses outside the concentration, which encourages an understanding of diverse cultural contexts.

### Minor Requirements (7 units)

- At least 3 must be at the 300 level.
- Only 1 may be an introductory colloquium:

Course	Title
HISTORY 101-7	College Seminar - European History
HISTORY 101-8	First-Year Writing Seminar - European History
HISTORY 102-7	College Seminar - American History
HISTORY 102-8	First-Year Writing Seminar - American History
HISTORY 103-7	College Seminar - Non-Western History
HISTORY 103-8	First-Year Writing Seminar - Non-Western History

- 4 must be in one of the following areas of concentration, and at least 2 of these must be at the 300 level:
  - Africa
  - Asia
  - Europe, including Britain
  - Latin America
  - Middle East
  - United States
  - Economic and labor history<sup>1</sup>
  - Environmental history<sup>1</sup>
  - Law and crime<sup>1</sup>
  - Science and technology<sup>1</sup>
- 3 must be outside the area of concentration.

<sup>1</sup> See History Department website (<https://www.history.northwestern.edu/undergraduate/major-minor/minor-requirements.html>) for details.

## Humanities

[humanities.northwestern.edu](http://humanities.northwestern.edu)

Humanities courses—known as “HUM” in CAESAR (<https://caesar.northwestern.edu/>)—are offered by the Kaplan Humanities Institute (<https://www.humanities.northwestern.edu>). With the exception of particular courses for first-year students (such as those specific to

the Kaplan Humanities Scholars Program (p. 344)), they are **open to all Northwestern students**—from any year, any school, any major.

### What are the humanities?

The humanities are an interdisciplinary collection of fields that differ from physical, biological, and certain of the social sciences by concentrating on the study and interpretation of human thought and culture. The humanities include literature, philosophy, history, law, art, and music, as well as other cultural forms and practices such as film, dance, theater, media, and religion.

The humanities explore how we make sense of our complex and globalized world. Studying them permits us to examine ourselves and what it means to be human—here and now, as well as elsewhere and in the past. The humanities foster a critical perspective on human artifacts and records of human experience (verbal, visual, aural), enabling us to learn, through a combination of interpretative and analytical research, how to think creatively about questions that often do not have set answers.

### Overview of HUM courses

Each course may feature unique methods, but all humanities courses emphasize critical reading, speaking, and writing skills; examine subjects from multiple perspectives; and provide training in synthesizing competing forms of evidence and developing complex opinions and arguments.

Many HUM classes are small-enrollment, 300-level seminars taught by faculty from a range of disciplines, from classics to English, Black studies to performance studies, and all humanities departments in between. Very few HUM courses have prerequisites, and many fulfill foundational discipline requirements.

Several HUM courses are one-of-a-kind, offered only once in a student's career at Northwestern. Many of these class offerings are fitted under broad “umbrella” categories (for example, HUM 370-X, etc.) with specific descriptions/instructors listed per quarter on CAESAR (<https://caesar.northwestern.edu/>) and the Kaplan Institute website (<https://www.humanities.northwestern.edu/courses/>). HUM lecture courses (like HUM 205-0, HUM 220-0, HUM 329-0, etc.) are not always taught in the same quarter from year to year, so check CAESAR each quarter to see what is being offered.

### Open to all majors

Many students think that humanities courses are only open to participants in the first-year Kaplan Humanities Scholars Program—not so! The Kaplan Institute encourages students from any major or field of study to enroll in HUM courses. **Humanities training—in deliberation, analysis, and judgment—enables students to process the human experience from varied perspectives, which is valuable preparation for any scholarly or career pursuit.**

### Special Kaplan Institute offerings

Kaplan's Global Humanities Labs (<https://www.humanities.northwestern.edu/undergraduate/global-humanities-lab/>) are seminars that feature international field study. The Humanities Plunge (<https://www.humanities.northwestern.edu/undergraduate/humanities-plunge/>) is a spring break immersion in Chicago's theater, art, music, architecture, and dance, guided by artists and scholars to help students analyze and interpret these cultural riches. And the Kaplan Humanities Scholars Program (<https://humanities.northwestern.edu/kaplan-humanities-scholars-program/>) offers first-year Weinberg students

the opportunity to enroll in a unique exploration of the humanities that is team-taught through a paired seminar and lecture course. (Students apply for this program based on materials from their Northwestern application file.)

## Alice Kaplan Institute for the Humanities

The Kaplan Humanities Institute provides opportunities for students, faculty, and the broader community to explore issues, examine beliefs, and engage in interdisciplinary dialogue about what it means to be human, across time and space. As a site for exchange and connection across the humanities, sciences, and social sciences at Northwestern, we support faculty and student research; host a range of dynamic talks, workshops, and performances; support artists in residence; and offer an innovative curriculum of classes positioned at the intersection of humanities disciplines.

## Program of Study

- Humanities Minor (p. 344)
- Kaplan Humanities Scholars Program (p. 344)

### HUM 100-1-BR Introduction to Critical Thinking in the Humanities and Social Sciences (0.5 Unit)

For participants in Bridge I summer program. Commonalities and distinguishing features of critical thinking in humanities and social sciences. Emphasis on analysis and argumentation. Taken with MATH 100-BR.

**HUM 100-2-BR Topics in Research (0.5 Unit)** For participants in Bridge summer program. Research questions, beginning research, and related skills in humanities or social sciences.

**HUM 101-6 College Seminar (1 Unit)** Part of a two-course exploration of the humanities for first-year students selected into the Kaplan Humanities Scholars Program. This team-taught program—lecture + small coordinated seminar—is designed to challenge students to integrate a variety of intellectual methods to probe the qualitative aspects of human experience. Course topics and instructors change each year. The seminar section (2 days/week) is HUM 101-6 and the paired lecture section (2 days/week) is HUM 210-0, HUM 211-0, HUM 212-0, or HUM 213-0. Prerequisite: This course is reserved for first-year students of the Kaplan Humanities Scholars Program.

**HUM 105-0 The Humanities Plunge (0.5 Unit)** A half-credit course over spring break immersing students in Chicago's cultural riches. Events and tours are introduced and contextualized by field experts. Enrollment in the Plunge is by application.

**HUM 205-0 The World of Homer (1 Unit)** Introduction to the history and material culture of Iron Age Greece. Society, economy, art, and archaeology of the Greek world that gave rise to the Homeric epic. CLASSICS 210-0 and HUM 205-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area*

**HUM 210-0 Humanities in the World I (1 Unit)** Part of a two-course exploration of the humanities for first-year students selected into the Kaplan Humanities Scholars Program. This team-taught program—lecture + small coordinated seminar—is designed to challenge students to integrate a variety of intellectual methods to probe the qualitative aspects of human experience. Course topics and instructors change each year. The seminar section (2 days/week) is HUM 101-6 and the paired lecture section (2 days/week) is HUM 210-0, HUM 211-0, HUM 212-0, or HUM 213-0. Prerequisite: This course is reserved for first-year students of

the Kaplan Humanities Scholars Program. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**HUM 211-0 Humanities in the World II (1 Unit)** Part of a two-course exploration of the humanities for first-year students selected into the Kaplan Humanities Scholars Program. This team-taught program—lecture + small coordinated seminar—is designed to challenge students to integrate a variety of intellectual methods to probe the qualitative aspects of human experience. Course topics and instructors change each year. The seminar section (2 days/week) is HUM 101-6 and the paired lecture section (2 days/week) is HUM 210-0, HUM 211-0, HUM 212-0, or HUM 213-0. Prerequisite: This course is reserved for first-year students of the Kaplan Humanities Scholars Program. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HUM 212-0 Humanities in the World III (1 Unit)** Part of a two-course exploration of the humanities for first-year students selected into the Kaplan Humanities Scholars Program. This team-taught program—lecture + small coordinated seminar—is designed to challenge students to integrate a variety of intellectual methods to probe the qualitative aspects of human experience. Course topics and instructors change each year. The seminar section (2 days/week) is HUM 101-6 and the paired lecture section (2 days/week) is HUM 210-0, HUM 211-0, HUM 212-0, or HUM 213-0. Prerequisite: This course is reserved for first-year students of the Kaplan Humanities Scholars Program. *Ethical and Evaluative Thinking Foundational Disci*

**HUM 213-0 Humanities in the World IV (1 Unit)** Part of a two-course exploration of the humanities for first-year students selected into the Kaplan Humanities Scholars Program. This team-taught program—lecture + small coordinated seminar—is designed to challenge students to integrate a variety of intellectual methods to probe the qualitative aspects of human experience. Course topics and instructors change each year. The seminar section (2 days/week) is HUM 101-6 and the paired lecture section (2 days/week) is HUM 210-0, HUM 211-0, HUM 212-0, or HUM 213-0. Prerequisite: This course is reserved for first-year students of the Kaplan Humanities Scholars Program. *Social and Behavioral Science Foundational Discipl*

**HUM 220-0 Health, Biomedicine, Culture, and Society (1 Unit)** Broad introduction to controversies surrounding health and biomedicine by analyzing culture, politics, values, and social institutions. HUM 220-0 and SOCIAL 220-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**HUM 260-0 Humanities Explorations (1 Unit)** Lecture course, often team-taught, that explores social, ethical, and political big questions - e.g., the nature of love, the value of reading, relativity in science and culture, ways to model "choice" across the humanities - from different disciplinary perspectives. May be repeated for credit with change of topic.

**HUM 310-3 Global Humanities Lab (1 Unit)** Investigation of an international humanities topic through experiential learning and offsite research; focus on how different cultures process and understand the artifacts of human cultures and their values. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Social Behavioral Sciences Distro Area*

**HUM 310-4 Global Humanities Lab (1 Unit)** Investigation of an international humanities topic through experiential learning and offsite research; focus on how different cultures process and understand the artifacts of human cultures and their values. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Historical Studies Distro Area*

**HUM 310-5 Global Humanities Lab (1 Unit)** Investigation of an international humanities topic through experiential learning and offsite research; focus on how different cultures process and understand the artifacts of human cultures and their values. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Ethics Values Distro Area*

**HUM 310-6 Global Humanities Lab (1 Unit)** Investigation of an international humanities topic through experiential learning and offsite research; focus on how different cultures process and understand the artifacts of human cultures and their values. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area*

**HUM 325-3 Humanities in the Digital Age (1 Unit)** Innovative and collaborative ways to incorporate technology into humanistic study. Ways to digitize text, image, sound, and/or video for analysis. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HUM 325-4 Humanities in the Digital Age (1 Unit)** Innovative and collaborative ways to incorporate technology into humanistic study. Ways to digitize text, image, sound, and/or video for analysis. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HUM 325-5 Humanities in the Digital Age (1 Unit)** Innovative and collaborative ways to incorporate technology into humanistic study. Ways to digitize text, image, sound, and/or video for analysis. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**HUM 325-6 Humanities in the Digital Age (1 Unit)** Innovative and collaborative ways to incorporate technology into humanistic study. Ways to digitize text, image, sound, and/or video for analysis. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**HUM 329-0 Archaeology and Nationalism (1 Unit)** The course explores the role of archaeology in the creation and elaboration of national identities (18th Century to present): the institutionalization of archaeology; development of museums and practices of display/interpretation; archaeological sites as national monuments and tourist destinations; and cultural property legislation and artifact repatriation. HUM 329-0 and ANTHRO 329-0 are taught together; may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**HUM 370-3 Special Topics in the Humanities (1 Unit)** Intensive seminars in cutting-edge research on interdisciplinary issues. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change in topic. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**HUM 370-4 Special Topics in the Humanities (1 Unit)** Intensive seminars in cutting-edge research on interdisciplinary issues. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change in topic. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**HUM 370-5 Special Topics in the Humanities (1 Unit)** Intensive seminars in cutting-edge research on interdisciplinary issues. Course number indicates distribution requirement area in which a course counts. May be

repeated for credit with change in topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**HUM 370-6 Special Topics in the Humanities (1 Unit)** Intensive seminars in cutting-edge research on interdisciplinary issues. Course number indicates distribution requirement area in which a course counts. May be repeated for credit with change in topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **HUM 395-0 Humanities Seminar (1 Unit)**

Interdisciplinary course offered by a changing roster of humanities faculty. Topics have included cities as modern utopia/dystopia; the afterlife of Marxism; the politics of reputation; being animal, being human; writing ancestry.

**HUM 397-0 Exhibiting Antiquity: The Culture and Politics of Display (1 Unit)** Examination of the construction of Mediterranean antiquity through modes of reception since 1750. Analysis of programs of collecting and display and the intersection of institutional and scholarly agendas. ART\_HIST 318-0, CLASSICS 397-0 and HUM 397-0 taught together; may receive credit for only 1 of these courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area*

**HUM 398-1 Senior Humanities Seminar (0.5 Unit)** Two consecutive quarters (fall and winter) during which students work on a senior humanities project under faculty mentorship and within the interdisciplinary community of the Kaplan Humanities Institute. Prerequisite: selection as a Franke Undergraduate Fellow.

**HUM 398-2 Senior Humanities Seminar (0.5 Unit)** Two consecutive quarters (fall and winter) during which students work on a senior humanities project under faculty mentorship and within the interdisciplinary community of the Kaplan Humanities Institute. Prerequisite: selection as a Franke Undergraduate Fellow.

**HUM 399-0 Independent Study (1 Unit)** Individual projects with faculty guidance. Open to junior and senior minors. Prerequisite: consent of instructor.

## **Humanities Minor**

The minor in the humanities exposes undergraduate students to diverse examples of human thought and culture and to the interdisciplinary methods and theories used in humanities scholarship. The minor is rooted in the idea that the opportunity to study an assortment of humanities topics from a wide range of perspectives provides an excellent complement to more closely focused coursework undertaken in any major, inside or outside the humanities.

Humanities minors get priority in registering for HUM classes during pre-registration periods.

## **Minor Requirements (7 units)**

- Up to three (3) 200-level HUM classes
- Balance from 300-level HUM classes, which may include HUM 399-0 Independent Study and/or a humanities internship through the Chicago Field Studies (p. 267) program

## **Kaplan Humanities Scholars Program**

Students accepted into the competitive Kaplan Humanities Scholars Program participate in an innovative exploration of the humanities via two intensive courses in fall of the first year. Designed especially for program participants, the **Humanities in the World** lecture course

(HUM 210-0, HUM 211-0, HUM 212-0, or HUM 213-0) and the small coordinated **College Seminar** (HUM 101-6) are team-taught by award-winning professors drawn from different departments. Through these linked courses, students take up a broad humanistic theme that traverses the boundaries of academic disciplines—as well as those of geography, culture, and historical periods—and integrate a variety of intellectual methods to refine their critical reading and writing skills; confront the works of great authors and artists; attend special performances and field trips; and examine how artists, thinkers, and ordinary citizens alike have contributed to the central role played by the humanities in our world. Incoming first-year students apply for admission to the program based on materials already in their original Northwestern application file. For more information, see the webpage for the Kaplan Humanities Scholars Program (<https://humanities.northwestern.edu/kaplan-humanities-scholars-program/>).

## Integrated Science

[isp.northwestern.edu](http://isp.northwestern.edu)

The Integrated Science Program is a highly selective curriculum of natural sciences and mathematics presented predominantly in small classes at an accelerated pace. Courses emphasize the common base and relationships between the traditional sciences, including the importance of mathematics and the development of first principles, leading to interdisciplinary topics at the forefront of science today. The goal is to provide students who are interested in careers in science and mathematics with a broad quantitative background that will give them superior preparation for further work in graduate or professional schools or permanent employment. The curriculum is composed of 25.7 units, up to 3 of which may be independent research, as well as a regular seminar series. Most students take advantage of the opportunity to pursue research in world-class laboratories at Northwestern and are able to publish peer-reviewed papers in professional journals. For Weinberg College students ISP may lead to a three-year bachelor of arts degree if, by the end of the third year, the student has completed 38.7 or more units and satisfied all other college requirements.

Students must be accepted to Northwestern to be eligible for admission to ISP, which requires a separate application to the program director. For more information on admission procedures, see Special Admission Programs (p. 11). Also see the ISP website for the required AP and achievement tests.

The ISP curriculum consists of specially designed courses taught by faculty members of science and mathematics departments. Course descriptions are found in the appropriate departments in this catalog. Though listed in a three-year format, the program is often spread over four years, particularly if a student wishes to combine an ISP major with a second major in a traditional department, such as biological sciences, chemistry, computer science, environmental sciences, earth and planetary sciences, materials science, mathematics, neuroscience, physics, psychology, or in an engineering field. Specific second-major requirements for ISP students can be found on the program website and under individual departments in this catalog.

## Program of Study

- Integrated Science Major (p. 345)

**INTG\_SCI 398-0 Undergraduate Research (1 Unit)** Advanced independent study and research for superior students. Consent of ISP director required.

## Integrated Science Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Major Requirements (25.7 units)</b>	
<i>First Year</i>	
COMP_SCI 111-0	Fundamentals of Computer Programming
CHEM 171-0 & CHEM 181-0 & CHEM 172-0 & CHEM 182-0	Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory and Advanced General Physical Chemistry and Advanced General Physical Chemistry Laboratory
MATH 281-1 & MATH 281-2 & MATH 281-3	Accelerated Mathematics for ISP. First Year and Accelerated Mathematics for ISP. First Year and Accelerated Mathematics for ISP. First Year
PHYSICS 125-1 & PHYSICS 125-2 & PHYSICS 125-3 & PHYSICS 126-1 & PHYSICS 126-2 & PHYSICS 126-3	General Physics ISP and General Physics for ISP and General Physics for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP
<i>Second Year</i>	
BIOL_SCI 240-0 & BIOL_SCI 241-0	Biochemistry, Molecular and Cell Biology for ISP - 1 and Biochemistry, Molecular and Cell Biology for ISP - 2
BIOL_SCI 232-0	Molecular and Cellular Processes Laboratory
BIOL_SCI 233-0	Genetics and Molecular Processes Laboratory
CHEM 217-1 & CHEM 237-1	Accelerated Organic Chemistry I and Accelerated Organic Chemistry Laboratory I
CHEM 348-0	Physical Chemistry for ISP
EARTH 350-0	Physics of the Earth for ISP
MATH 381-0	Fourier Analysis and Boundary Value Problems for ISP
MATH 382-0	Complex Analysis for ISP
PHYSICS 339-1 & PHYSICS 339-2	Quantum Mechanics and Quantum Mechanics
<i>Third Year</i>	
ASTRON 331-0	Astrophysics for ISP
Required 300-level BIOL_SCI course <sup>1</sup>	
NEUROSCI 311-0	Biophysical Analysis of Neurons for ISP
PHYSICS 337-0 or PHYSICS 339-3	Physics of Condensed Matter Particle and Nuclear Physics
STAT 383-0	Probability and Statistics for ISP

<sup>1</sup> One of these 8 courses: BIOL\_SCI 323-0 Bioinformatics: Sequence and Structure Analysis, BIOL\_SCI 341-0 Population Genetics, BIOL\_SCI 361-0 Protein Structure and Function, BIOL\_SCI 390-0 Molecular Biology of Genome Editing and Engineering, BIOL\_SCI 337-0

Biostatistics, BIOL\_SCI 338-0 Modeling Biological Dynamics, BIOL\_SCI 354-0 Systems Biology, or BIOL\_SCI 363-0 Biophysics.

Course	Title
<b>With permission, Undergraduate Research (INTG_SCI 398-0) may be substituted for up to 3 of the following courses:</b>	
ASTRON 331-0	Astrophysics for ISP
Required 300-level BIOL_SCI course	
MATH 382-0	Complex Analysis for ISP
NEUROSCI 311-0	Biophysical Analysis of Neurons for ISP
PHYSICS 337-0 or PHYSICS 339-3	Physics of Condensed Matter Particle and Nuclear Physics

## Honors in Integrated Science

Students eligible to pursue honors based on their overall performance in ISP courses will be so informed no later than fall quarter of senior year. Those who choose to pursue honors must then enroll with a faculty research adviser in at least 2 quarters of Undergraduate Research either in ISP (INTG\_SCI 398-0) or an ISP-affiliated department (some of these credits may count toward the major; see the program director for details). At the beginning of May eligible students submit a senior thesis describing their research activities for consideration by the ISP committee.

Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information consult the program director and see Honors in the Major (p. 222).

## International Studies

[internationalstudies.northwestern.edu](http://internationalstudies.northwestern.edu)

International studies is an undergraduate adjunct major taken in conjunction with a disciplinary major. It complements other Weinberg majors with a broad perspective on global issues. It is open to students in all schools.

The adjunct major provides students with a platform for interdisciplinary understanding of international affairs in connection with contemporary politics and society. Students are required to take a core set of courses in history, economy and markets, and US foreign policy that are designed to introduce key elements and concepts related to global and international issues. Each student also chooses a thematic concentration, taking courses from a variety of disciplines such as history, political science, economics, anthropology, literature, art, linguistics, global health, music, and religion. Students complete the major with either an integrating project seminar related to the thematic focus or an honors thesis that includes a 2-quarter honors seminar.

Each student majoring in international studies has a different combination of courses. Because international studies majors must show a minimum of 8 courses not double-counted in any other major(s), students should see an international studies adviser when designing their programs.

## Programs of Study

- International Studies Adjunct Major (p. 346)
- International Studies Minor (p. 347)

**INTL\_ST 290-0 Topics in International Studies (1 Unit)** Topics vary. Augments offerings of departments. *Social Behavioral Sciences Distro Area*

**INTL\_ST 383-1 Elliott Scholars Program: Foundation Topics in Global Affairs (0 Unit)** The Elliott Scholars Program, offered with the Buffett Institute for Global Affairs, provides an opportunity for a cohort of undergraduates to engage deeply in a critical issue within global affairs from an interdisciplinary perspective. This first seminar will provide students with a foundational understanding of the issue, which will vary as different professors participate. This is an application-based program. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**INTL\_ST 390-0 Special Topics in International Studies (1 Unit)** Topics vary. Augments offerings of departments.

**INTL\_ST 393-0 Development in the Global Context: Participation, Power, and Social Change (1-3 Units)** Central debates and issues of international development. Global poverty, development goals, alternative approaches, participation, scale, sustainability, power, evaluation, and social change. Restricted to students in the Global Engagement Studies Institute program. *Social Behavioral Sciences Distro Area*

**INTL\_ST 393-SA Development in the Global Context: Participation, Power, and Social Change (1-3 Units)** Central debates and issues of international development. Global poverty, development goals, alternative approaches, participation, scale, sustainability, power, evaluation, and social change. Restricted to students in the Global Engagement Studies Institute program. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**INTL\_ST 395-0 Integrating Project Seminar (1 Unit)** Small research seminars allow international studies majors to conduct research in their chosen themes.

**INTL\_ST 398-1 Honors Seminar (1 Unit)** Two consecutive quarters (fall and winter) during which students work on their senior theses. Admission by written application to the program director.

**INTL\_ST 398-2 Honors Seminar (1 Unit)** Two consecutive quarters (fall and winter) during which students work on their senior theses. Admission by written application to the program director.

**INTL\_ST 399-0 Independent Research (1 Unit)** Advanced research is carried out under the supervision of a Northwestern professor. Independent study may count toward completion of a thematic cluster. Consent of the director of the undergraduate's major is required following submission of a written proposal.

## International Studies Adjunct Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The major in International Studies is a gateway to the study of global affairs in Weinberg College. Its mission is to encourage and support student education and scholarship in international affairs and it is open to all Weinberg students and to students from across the university. In addition to the curriculum set out below, International Studies offers

weekly seminars, research support, career counseling, public events, and more.

## Adjunct Major Requirements (10 units)

- 5 core courses

Course	Title
HISTORY 250-1	Global History: Early Modern to Modern Transition
HISTORY 250-2	Global History: The Modern World
HISTORY 319-0 or POLI_SCI 344-0 or JOUR 353-0	US Foreign Relations U.S. Foreign Policy Dilemmas of American Power
ECON 201-0 or SOCIO 215-0	Introduction to Macroeconomics Economy and Society
POLI_SCI 240-0	Introduction to International Relations

- 4 courses (except where noted) in a thematic concentration.

More information about the concentrations and lists of eligible courses may be found each quarter at the program office and on the International Studies website (<https://www.internationalstudies.northwestern.edu>).

- Global Humanities
- Political Economy
- Borders, Boundaries, and Crossings
- Global Law and Society
- The U.S. and the World
- World Language and Experience - requires six units of training in a language beyond coursework satisfying the International Studies language study requirement, plus study abroad or comparable experience outside the U.S.
- Students who wish to propose a thematic program of study that does not fit into one of the themes listed above may petition to create a self-designed thematic cluster.
- 1 unit minimum of integrating project seminar or thesis seminar
- Most international studies majors in their junior or senior year take INTL\_ST 395-0 Integrating Project Seminar. The seminar provides a format to complete a research project that integrates a variety of disciplines to address an issue in international culture, society, economics, or politics.
- Instead of an integrating seminar, students admitted to the international studies honors program participate in the 2-quarter thesis seminar (INTL\_ST 398-1 & INTL\_ST 398-2) and write an integrated honors thesis.
- Language study requirement. Students must demonstrate proficiency in a language other than English at a level equivalent to two full years of instruction at Northwestern. Students must also take at least three language courses at Northwestern even if they have documented proficiency in one non-English language through testing. These three units of credit may be at any language-learning level and may count towards the Weinberg College language proficiency requirement. They are not subject to double-counting restrictions with other majors or minors.
- All adjunct majors require completion of a stand-alone major as well. At most 2 of the 10 required units may be double-counted toward both the international studies adjunct major and another major.

## Honors in International Studies

Majors with strong academic records and an interest in pursuing honors should apply in spring quarter of junior year. Students accepted into

the honors program enroll in a 2-quarter seminar (INTL\_ST 398-1, INTL\_ST 398-2) in fall and winter of senior year, during which they plan, research, and write their theses. The two seminar enrollments take the place of the integrating project seminar required of other international studies majors.

Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information contact the International Studies Program (<https://www.internationalstudies.northwestern.edu>), and see Honors in the Major (p. 222).

## International Studies Minor

### Minor Requirements (8 units)

Students who minor in International Studies must take four courses chosen from a list of core courses, and complete one concentration of at least four courses. Though students completing the minor are not required to take a capstone seminar or complete the language requirement, Weinberg College or other school requirements for proficiency in a language other than English may still apply.

- 4 core courses chosen from:

Course	Title
HISTORY 250-1	Global History: Early Modern to Modern Transition
HISTORY 250-2	Global History: The Modern World
HISTORY 319-0 or POLI_SCI 344-0 or JOUR 353-0	US Foreign Relations U.S. Foreign Policy Dilemmas of American Power
ECON 201-0 or SOCIO 215-0	Introduction to Macroeconomics Economy and Society
POLI_SCI 240-0	Introduction to International Relations

- 4 courses (except where noted) in a thematic concentration.

More information about the concentrations and lists of eligible courses may be found each quarter at the program office and on the International Studies website (<https://www.internationalstudies.northwestern.edu>).

- Global Humanities
- Political Economy
- Borders, Boundaries, and Crossings
- Global Law and Society
- The U.S. and the World
- World Language and Experience - requires six units of training in a language beyond coursework satisfying the International Studies language study requirement, plus study abroad or comparable experience outside the U.S.
- Students who wish to propose a thematic program of study that does not fit into one of the themes listed above may petition to create a self-designed thematic cluster.

## Italian

See French and Italian (p. 306).

## Japanese

See Asian Languages and Cultures (p. 242).

# Jewish Studies

[jewish-israel-studies-center.northwestern.edu](http://jewish-israel-studies-center.northwestern.edu)

Jewish Studies at Northwestern is an interdisciplinary enterprise examining Jewish life from ancient to modern times with a focus on the interaction between the Jewish people and the world. It explores Jewishness as a cultural, ethnic and/or religious identity and phenomenon. More specifically, Jewish Studies courses offer instruction in Jewish texts and languages, philosophy and literature, religion and history. Our faculty seek to develop students' skills in critical reading, writing, and thinking, using comparative approaches, and building bridges between the universal and the particular. In addition, our program offers course on the modern state of Israel focusing on the history, politics, culture, and economics of contemporary Israeli society as well as on Israeli technological and scientific scholarship.

You can take Jewish Studies courses to fulfill degree requirements (such as foundational disciplines), as a way to explore your identity, as a step toward bettering your critical thinking, or simply out of curiosity. The students who take Jewish Studies courses are a diverse group and many have no background in Judaism before they begin.

Jewish Studies also partners with the Middle East and North African Languages Program (<https://mena-languages.northwestern.edu>) to provide Hebrew language classes, which are offered at three levels.

**In addition to courses with the JWSH\_ST prefix, Jewish Studies courses are offered by many departments and programs. The following is a sample; a list of courses being taught this academic year is available on the program website (<https://www.jewish-israel-studies-center.northwestern.edu/undergraduate/courses/>):**

- COMP\_LIT 270-0 Literatures in Translation (relevant sections; consult with DUS)
- GNDR\_ST 382-0 Race, Gender, and Sexuality (relevant sections; consult with DUS)
- GERMAN 234-1 Jews and Germans: An Intercultural History I
- GERMAN 234-2 Jews and Germans: An Intercultural History II
- GERMAN 366-0 Yiddish Culture and the Holocaust
- HISTORY 203-1 Jewish History I: 750-1492
- HISTORY 203-2 Jewish History II: Early Modern, 1492-1789
- HISTORY 203-3 Jewish History III: 1789-1948
- HISTORY 347-0 Christians and Jews
- HISTORY 348-1 Jews in Poland, Ukraine, and Russia
- HISTORY 348-2 Jews in Poland, Ukraine, and Russia
- HISTORY 349-0 The History of the Holocaust
- HISTORY 393-0 Approaches to History (relevant sections; consult with DUS)
- HISTORY 395-0 Research Seminar (relevant sections; consult with DUS)
- POLI\_SCI 395-0 Political Research Seminar (relevant sections; consult with DUS)

- RELIGION 220-0 Introduction to Hebrew Bible
- RELIGION 230-0 Introduction to Judaism
- RELIGION 329-0 Topics in the Bible (relevant sections; consult with DUS)
- RELIGION 330-0 Varieties of Ancient Judaism
- RELIGION 333-0 Judaism in the Modern World
- RELIGION 339-0 Topics in Judaism
- RELIGION 374-0 Contemporary Religious Thought (relevant sections; consult with DUS)
- RELIGION 379-0 Topics in Comparative Religion (relevant sections; consult with DUS)
- SESP 351-0 Special Topics (relevant sections; consult with DUS)
- SPANISH 397-0 Topics in Latin American, Latina & Latino, and Iberian Literatures and Cultures (Taught in English) (relevant sections; consult with DUS)

## Programs of Study

- Jewish Studies Major (p. 350)
- Hebrew Studies Minor (p. 350)
- Jewish Studies Minor (p. 351)

Below see also Hebrew Courses (p. 349). In addition, please see relevant courses listed by other academic units here (p. 348).

## Jewish Studies Courses

**JWSH\_ST 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**JWSH\_ST 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**JWSH\_ST 210-0 Jewish Studies: An Overview (1 Unit)** Introduction to the field of Jewish studies. Methodologies used to research and analyze Jewish culture, history, and religion. *Ethics Values Distro Area*

**JWSH\_ST 242-0 Imagining Modern Jewish Culture in Yiddish and German (1 Unit)** History and character of Yiddish and the development of modern German culture in general and German-Jewish culture in particular. Appreciation of the variety of "Judaisms" imagined and reimagined during modern European history. GERMAN 242-0 and JWSH\_ST 242-0 are taught together; may not receive credit for both courses. *Literature Fine Arts Distro Area*

**JWSH\_ST 266-0 Introduction to Yiddish Culture: Images of the Shtetl (1 Unit)** Analysis and discussion of the literary, visual, and filmic images of the communal life developed by Eastern European Jews and inseparably associated with them. GERMAN 266-0 and JWSH\_ST 266-0 are taught together; students may receive credit for only one of these. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**JWSH\_ST 278-0 Modern Hebrew Literature in Translation (1 Unit)** History of Hebrew literature. *Literature Fine Arts Distro Area*

**JWSH\_ST 279-0 Modern Jewish Literature (1 Unit)** Modern European, American, and Israeli Jewish literature in historical context. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**JWSH\_ST 280-4 Topics in Israel Studies (1 Unit)** Topics in Israel Studies: History, culture and society of the modern State of Israel. Content varies. May be repeated for credit with change of topic. Topics taught under this course number may be applied towards Weinberg College distribution requirement Area IV. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**JWSH\_ST 280-5 Topics in Israel Studies (1 Unit)** Topics in Israel Studies History, culture and society of the modern State of Israel. Content varies. May be repeated for credit with change of topic. Topics taught under this course number may be applied towards Weinberg College distribution requirement Area V. *Ethics Values Distro Area*

**JWSH\_ST 280-6 Topics in Israel Studies (1 Unit)** Topics in Israel Studies: History, culture and society of the modern State of Israel. Content varies. May be repeated for credit with change of topic. Topics taught under this course number may be applied towards Weinberg College distribution requirement Area VI. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**JWSH\_ST 280-7 Topics in Israel Studies (1 Unit)** Topics in Israel Studies: History, culture and society of the modern State of Israel. Content varies. Course number indicates distribution area towards which course counts. May be repeated for credit with change of topic.

**JWSH\_ST 350-0 Representing the Holocaust in Literature and Film (1 Unit)** Analysis of artistic, ethical, and historical questions about representing the Holocaust in different genres. *Literature Fine Arts Distro Area*

**JWSH\_ST 366-0 Yiddish Culture and the Holocaust (1 Unit)** Analysis of modern Yiddish literature before the Holocaust as well as literary work that emerged from Yiddish-speaking writers who survived the Second World War. GERMAN 366-0 and JWSH\_ST 366-0 are taught together; may receive credit for only one course. Prerequisite: None. *Literature Fine Arts Distro Area*

**JWSH\_ST 379-0 Storytelling in American Jewish Literature (1 Unit)** Modern Jewish writers from diverse national and linguistic backgrounds who have reshaped the oral tradition in Judaism to their individual talents. *Literature Fine Arts Distro Area*

**JWSH\_ST 390-0 Topics in Jewish Studies (1 Unit)** Addresses topics not covered by other course offerings. Content varies.

**JWSH\_ST 396-0 Topics in Modern Jewish Culture (1 Unit)** Analysis of major texts and figures in 20th and 21st century Jewish literature, with attention to their cultural context and import. *Literature Fine Arts Distro Area*

**JWSH\_ST 399-0 Independent Study (1 Unit)** For majors selected as candidates for departmental honors. Consent of department is required to enroll.

## Hebrew Courses

**HEBREW 111-1 Hebrew I (1 Unit)** This sequence offers students a systematic introduction to Hebrew language and culture. Emphasizes the four modalities-speaking, listening comprehension, reading, and writing. Prerequisite: None or one year of high-school Hebrew or placement test results.

**HEBREW 111-2 Hebrew I (1 Unit)** This sequence offers students a systematic introduction to Hebrew language and culture. Emphasizes the

four modalities-speaking, listening comprehension, reading, and writing. Prerequisite: HEBREW 111-1 or equivalent.

**HEBREW 111-3 Hebrew I (1 Unit)** This sequence offers students a systematic introduction to Hebrew language and culture. Emphasizes the four modalities-speaking, listening comprehension, reading, and writing. Prerequisite: HEBREW 111-2 or equivalent.

**HEBREW 121-1 Hebrew II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in Hebrew. Offers insights into Hebrew culture and history through written and audiovisual materials. Prerequisite: HEBREW 111-3 or equivalent.

**HEBREW 121-2 Hebrew II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in Hebrew. Offers insights into Hebrew culture and history through written and audiovisual materials. Prerequisite: HEBREW 121-1 or equivalent.

**HEBREW 121-3 Hebrew II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in Hebrew. Offers insights into Hebrew culture and history through written and audiovisual materials. Prerequisite: HEBREW 121-2 or equivalent.

**HEBREW 211-0 Hebrew III: Language and Culture (1 Unit)** Introduction to and practice of intermediate and advanced grammatical concepts in Hebrew through authentic cultural texts and current media sources. The course focuses on speaking, listening comprehension, reading, and writing skills. Prerequisite: HEBREW 121-3.

**HEBREW 216-1 Hebrew III:Topics in Hebrew Literature (1 Unit)** Hebrew language, literature, and culture. Material includes authentic written and audiovisual material such s films, TV shows, newspaper articles and literary pieces. Review of more complex grammar including the development of reading, writing, and speaking skills. Prerequisite: HEBREW 121-3 or equivalent. *Literature Fine Arts Distro Area*

**HEBREW 216-2 Hebrew III: Topics in Hebrew Literature (1 Unit)** Hebrew language, literature, and culture. Material includes authentic written and audiovisual material such s films, TV shows, newspaper articles and literary pieces. Review of more complex grammar including the development of reading, writing, and speaking skills. Prerequisite: HEBREW 121-3 or equivalent. *Literature Fine Arts Distro Area*

**HEBREW 216-3 Hebrew III: Topics in Hebrew Literature (1 Unit)** Hebrew language, literature, and culture. Material includes authentic written and audiovisual material such s films, TV shows, newspaper articles and literary pieces. Review of more complex grammar including the development of reading, writing, and speaking skills. Prerequisite: HEBREW 121-3 or equivalent. *Literature Fine Arts Distro Area*

**HEBREW 245-0 Current Events in Israel: Israeli Society through Online News Media (1 Unit)** This course focuses on current events in Israel through in-depth exploration of online news media sources such as foreign newspaper articles and videos. Students will gain respect for alternative ideas and diversity of views and learn how news and public opinion are chosen, disseminated, shared. The course focuses on reading, listening, discussion and on building a comprehensive Hebrew vocabulary. Prerequisite: HEBREW 121-3 or permission of the instructor. May be repeated for credit with different topic.

**HEBREW 316-1 Hebrew IV: Advanced Topics in Hebrew Literature (1 Unit)** Literature Reading 20th-century Hebrew literature. Presentations, discussion, and essays in Hebrew. Prerequisite: Three Hebrew courses at the 200-level or consent of instructor. *Literature Fine Arts Distro Area*

**HEBREW 316-2 Hebrew IV: Advanced Topics In Hebrew Literature (1 Unit)** Literature Reading 20th-century Hebrew literature. Presentations,

discussion, and essays in Hebrew. Prerequisite: Three Hebrew courses at the 200-level or consent of instructor. *Literature Fine Arts Distro Area*

**HEBREW 316-3 Hebrew IV: Advanced Topics in Hebrew Literature (1 Unit)** Literature Reading 20th-century Hebrew literature. Presentations, discussion, and essays in Hebrew. Prerequisite: Three Hebrew courses at the 200-level or consent of instructor. *Literature Fine Arts Distro Area*

**HEBREW 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Hebrew. Prerequisite: consent of instructor.

## Jewish Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

### Prerequisite

- Complete or place out of :

Course	Title
HEBREW 121-1	Hebrew II
& HEBREW 121-2	and Hebrew II
& HEBREW 121-3	and Hebrew II

## Major Requirements (12 units)

- 2 courses chosen from third-year Hebrew (HEBREW 216-1, HEBREW 216-2, HEBREW 216-3), courses in the Department of Religious Studies on classical Jewish texts in Hebrew, or other courses in Hebrew literature read in Hebrew
- RELIGION 230-0 Introduction to Judaism
- 1 course covering the biblical period, such as RELIGION 220-0 Introduction to Hebrew Bible
- 1 course covering the rabbinic period
- 2 courses covering the postrabbinic periods (post-800 CE), such as:

Course	Title
HISTORY 203-1	Jewish History I: 750-1492
HISTORY 203-2	Jewish History II: Early Modern, 1492-1789
HISTORY 348-1	Jews in Poland, Ukraine, and Russia
HISTORY 348-2	Jews in Poland, Ukraine, and Russia
HISTORY 349-0	The History of the Holocaust

- 5 additional courses counting for major or minor credit in Jewish studies; may include third-year courses in Hebrew
- At least 6 courses must be at the 300 level
- At least 1 must be from the history department
- At least 1 must be in literature

## Honors in Jewish Studies

Majors with strong academic records and an interest in pursuing honors should submit a written proposal in spring quarter of junior year. Accepted students take JWSH\_ST 399-0 Independent Study with their thesis adviser in fall and winter of senior year; 1 quarter may count toward the major. Alternatively, students may enroll in a 3-quarter-long seminar in a relevant department. Those interested in this option should

consult with the relevant department, the anticipated thesis adviser, and the Director of Undergraduate Studies.

Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information contact the director of undergraduate studies and see Honors in the Major (p. 222).

## Relevant Courses in Other Departments

Additional Jewish studies courses are offered by many departments and programs. This list (p. 348) is partial and in some cases, only certain sections of a course may count toward Jewish Studies. Please see the Jewish Studies website for up-to-date information and/or consult with the DUS.

## Hebrew Studies Minor

### Prerequisite

- Complete or place out of:

Course	Title
HEBREW 121-1	Hebrew II
& HEBREW 121-2	and Hebrew II
& HEBREW 121-3	and Hebrew II

## Minor Requirements (6 units)

- 2 courses conducted in Hebrew—for example, third-year Hebrew:

Course	Title
HEBREW 216-1	Hebrew III:Topics in Hebrew Literature
& HEBREW 216-2	and Hebrew III: Topics in Hebrew Literature
& HEBREW 216-3	and Hebrew III: Topics in Hebrew Literature

- 1 course on a classical Hebrew text read in Hebrew (eligible courses are typically on biblical, rabbinic, or mystical texts, such as RELIGION 329-0 Topics in the Bible or RELIGION 339-0 Topics in Judaism)
- 1 course on modern Hebrew literature, using Hebrew literary texts from the Haskalah through the contemporary periods, either in the original language or in English translation
- 1 course on modern Israel, exclusive of Israeli literature, typically in history, political science, sociology, or anthropology; must be approved by the director of undergraduate studies
- 1 elective chosen from Hebrew literature or Jewish literature, in translation or in the original; in Israel studies; in the Department of Linguistics relevant to Semitic languages; covering classical Hebrew texts in translation or in the original; or conducted in Hebrew. E.g.:

Course	Title
HEBREW 216-1	Hebrew III:Topics in Hebrew Literature
& HEBREW 216-2	and Hebrew III: Topics in Hebrew Literature
& HEBREW 216-3	and Hebrew III: Topics in Hebrew Literature
HEBREW 316-1	Hebrew IV: Advanced Topics in Hebrew Literature
& HEBREW 316-2	and Hebrew IV: Advanced Topics In Hebrew Literature
& HEBREW 316-3	and Hebrew IV: Advanced Topics in Hebrew Literature

- At least 2 of the 6 courses must be at the 300 level

## Jewish Studies Minor

### Minor Requirements (7 units)

The requirements outlined below do not require the study of Hebrew language. Students who complete two years of Hebrew language study at Northwestern have the option of completing the minor in Jewish Studies with five additional courses, as noted below (p. 351).

- 3 courses in Jewish history that provide a basis for advanced work
  - 1 course on ancient or biblical Judaism, such as RELIGION 220-0 Introduction to Hebrew Bible
  - 1 approved course on the history or culture of the Jewish people in the Middle Ages, such as HISTORY 203-1 Jewish History I: 750-1492
  - 1 approved course on some aspect of modern Jewish history, such as HISTORY 203-2 Jewish History II: Early Modern, 1492-1789 or HISTORY 348-2 Jews in Poland, Ukraine, and Russia
- 2 courses on Jewish religion offered in the Department of Religious Studies or approved by the director of undergraduate studies; eligible courses include:

Course	Title
RELIGION 230-0	Introduction to Judaism
RELIGION 333-0	Judaism in the Modern World
RELIGION 339-0	Topics in Judaism
RELIGION 374-0	Contemporary Religious Thought

- 2 additional approved courses chosen from the fields of Jewish literature; Jewish philosophy or theology; or the sociology/anthropology of Jewish communities
- At least 5 of the courses may not be double-counted toward a major
- Students who complete two years of Hebrew language study at Northwestern may complete the Jewish Studies minor with 5 additional courses:
  - 3 in Jewish history
  - 1 in religion
  - 1 in Jewish literature or philosophy

## Korean

See Asian Languages and Cultures (p. 242).

## Latin

See Classics (p. 268).

## Latin American and Caribbean Studies

lacs.northwestern.edu

The Program in Latin American and Caribbean Studies allows students to pursue a coherent interdisciplinary course of study on this region of the world, including courses offering a variety of perspectives: social, historical, linguistic, political, and cultural. The program requires a set of core courses and also offers a series of elective courses in several different departments. Students also are encouraged to study in a Latin American or Caribbean country through the programs offered by the Global Learning Office (<https://www.northwestern.edu/abroad/>).

## Program of Study

- Latin American and Caribbean Studies Minor (p. 351)

**LATIN\_AM 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LATIN\_AM 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LATIN\_AM 391-0 Topics in Latin American and Caribbean Studies (1 Unit)** An interdisciplinary introduction to significant topics in Latin American and Caribbean studies. Content varies from year to year; may be repeated for credit with a different topic.

## Latin American and Caribbean Studies Minor

All students in the program are expected to have an effective reading knowledge of Spanish, Portuguese, or another language spoken in the region. Students who would like more information about the minor should contact the program director.

### Course Title

#### Minor Requirements (8 units)

4 core courses, normally chosen from the following lists, although substitutions may be approved by the program director. At most 1 core course may come from each of the 5 areas.

Anthropology (p. 351)

History (p. 351)

Latina and Latino Studies (p. 352)

Political Science (p. 352)

Spanish and Portuguese (p. 352)

#### 4 additional courses on Latin America and the Caribbean

Courses must be chosen from the list on the program website or approved by the program director. Many departments and programs, especially anthropology, history, Latina and Latino studies, political science, and Spanish and Portuguese, regularly offer courses that can count toward this requirement.

1 course focusing on Latina/os in the United States is strongly recommended for students who do not take a LATINO core course.

- At most 2 LATINO courses may be counted toward the minor.
- At least 5 courses for the minor must not be double-counted toward a major.

## Core Course Areas

### Anthropology

#### Course Title

When relevant to Latin America, the Caribbean, and/or US Latina/os:

ANTHRO 390-0 Topics In Anthropology

ANTHRO 490-0 Topics in Anthropology

### History<sup>1</sup>

#### Course Title

HISTORY 260-1 Becoming Latin America, 1492-1830

HISTORY 260-2 History of Modern Latin America

HISTORY 365-0	Medicine in Latin America: From Chocolate to Che Guevara
HISTORY 366-0	Latin America in the Independence Era: American Indians and Nations
HISTORY 368-2	Revolutions in Latin America and the Caribbean from Haiti to Mexico
HISTORY 369-0	Development and Inequality in Modern Latin America

<sup>1</sup> HISTORY 300-0 New Lectures in History may also count toward this requirement when topic is relevant to Latin America or the Caribbean.

## Latina and Latino Studies

Course	Title
LATINO 201-0	Introduction to Latina and Latino Studies
LATINO 203-0	Introduction to Latina & Latino Cultural Studies
LATINO 218-0	Latino History
LATINO 222-0	Latina & Latino Youth in U.S. Cities
LATINO 277-0	Introduction to Latinx Literature
LATINO 342-0	Latina and Latino Social Movements
LATINO 391-0	Topics in Latina and Latino History
LATINO 392-0	Topics in Latina and Latino Social and Political Issues
LATINO 393-0	Topics in Latina and Latino Text and Representation

## Political Science

Course	Title
POLI_SCI 353-0	Politics of Latin America

## Spanish and Portuguese

Course	Title
PORT 396-0	Topics in Lusophone Cultures <sup>2</sup>
SPANISH 231-0	The "New" Latin American Narrative (Taught in English)
SPANISH 232-0	Discovering Jewish Latin America
SPANISH 260-0	Literature in Latin America before 1888
SPANISH 261-0	Literature in Latin America since 1888
SPANISH 340-0	Colonial Latin American Literature
SPANISH 341-0	Latin American Modernismo
SPANISH 342-0	Race and Representation in Latin America
SPANISH 343-0	Latin American Avant-Gardes
SPANISH 344-0	Borges
SPANISH 345-0	Reading the 'Boom'
SPANISH 346-0	Testimonial Narrative in Latin America
SPANISH 347-0	Literature and Revolution in Latin America
SPANISH 348-0	Readings in Latin American Short Fiction
SPANISH 350-0	Visual Culture in Latina/o America and Spain
SPANISH 361-0	Latin America: Studies in Culture and Society
SPANISH 380-0	Topics in Film in Latin America and/or Spain
SPANISH 395-0	Topics in Latin American, Latina and Latino, and/or Iberian Cultures <sup>2</sup>
SPANISH 397-0	Topics in Latin American, Latina & Latino, and Iberian Literatures and Cultures (Taught in English) <sup>2</sup>

<sup>2</sup> When relevant to Latin America, the Caribbean, and/or US Latina/os.

Latina and Latino Studies focuses on the historic and contemporary circumstances that shape Latina and Latino lives, spaces, subjectivities, and politics in the United States. This field encompasses diverse communities and nationalities while also offering critical attention to transnational dynamics or to how Latinas and Latinos relate and connect to cultural or geographical origins across the Americas. Similar to other race/ethnic studies fields, Latina and Latino Studies has origins outside of universities. To a large extent, it originated in social movements led by organizers, thinkers, artists, students, workers, and teachers who were opposed to legacies of racial injustice, ethnic prejudice, exploitation, criminalization, and neglect. Latina and Latino Studies represents the academic branch of this dynamic political culture. As an interdisciplinary field, it sustains this activist impulse by honoring the diverse mediums and methods through which Latinas and Latinos have advocated for social justice and dignity. Latina and Latino Studies produces ways of knowing and seeing that challenge normative and stereotypical representations of Latinas and Latinos in U.S. society. In solidarity with other race and ethnic studies interdisciplines, Latina and Latino Studies unsettles traditional and Eurocentric modes of knowledge production in order to recuperate, speculate and illuminate other possible worlds.

Our courses particularly explore: political economies, decolonial thought, expressive cultures, histories, inter- and intra-group dynamics, social movements, race and racialization, critical analysis of gender and sexuality, transnational processes, electoral politics, indigeneity and settler colonialism, slavery and anti-blackness, nepantla and border thought, and critical interrogations of heteropatriarchy.

Majors and minors meet with the Advisor for advising, including review and approval of course selections and review of progress toward timely completion of the major or minor.

## Programs of Study

- Latina and Latino Studies Major (p. 353)
- Latina and Latino Studies Minor (p. 354)

**LATINO 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LATINO 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LATINO 201-0 Introduction to Latina and Latino Studies (1 Unit)** Introduction to major themes and debates shaping US Latina/o communities, such as history of colonization, diverse ethnicities, debates on immigration, racialization, assimilation, and cultural resistance. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)* *Social Behavioral Sciences Distro Area*

**LATINO 203-0 Introduction to Latina & Latino Cultural Studies (1 Unit)** Introduction to representations of identity and difference through literary theories and cultural studies. Draws on diverse cultural texts such as literature, popular music, folklore, journalism, media, visual culture, and performance arts. *Literature Fine Arts Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

**LATINO 218-0 Latino History (1 Unit)** In this course, we will explore the 500-year history of Latinos in the United States—and, indeed, across the Americas—from the 16th century through the early 21st century. In its broadest sense, Latino History offers a reinterpretation of United States

# Latina and Latino Studies

latinostudies.northwestern.edu

history that focuses on race, migration, labor, and empire. HISTORY 218-0 and LATINO 218-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**LATINO 222-0 Latina & Latino Youth in U.S. Cities (1 Unit)** Cultural, social, and political contexts that shape the lives of Latina/o youth in US cities, as well as Latina/o youths' ideas of self-identity and civic engagement. *Social Behavioral Sciences Distro Area*

**LATINO 230-0 Grrrls Our Mothers Warned Us About: Introduction to Latina Feminist Sexualities (1 Unit)** This course examines Latina/x femmes and feminist sexualities through a broad range of visual artworks, performance, aesthetic, sexual desires, practices of survival, visual and sonic representations that disrupt and dismantle common misrepresentations of racialized sexualities centering Latina/x femmes. These varied productions of knowledge will help us understand how norms of ethnicity, race, class, nationality, and gender shape Latina/x femmes. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LATINO 232-0 Queer and Trans Latino Studies (1 Unit)** This course will examine the histories, theories, and cultural productions of Queer and Trans Latina/x. We will explore the construction of gender and sexuality as it intersects with race, class, immigration, and other relationships of power. This course traces the development of the field through Black feminist, women of color feminist, and queer of color critique writing and activism. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LATINO 277-0 Introduction to Latinx Literature (1 Unit)** Survey of major writers and movements from Spanish colonial era to the present, covering a range of genres and ethnicities. ENGLISH 277-0 and SPANISH 277-0 are taught together; students may receive credit for one of these courses, and cannot be enrolled in both. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LATINO 312-0 Latinx Chicago (1 Unit)** The Chicagoland area has long been a home for Latina/o/x communities. These communities, spanning and spilling beyond city limits, have profoundly shaped life in the Windy City. Drawing on the ever-growing interdisciplinary scholarship on Latinx Chicago, students will explore the local formation of Latinx identities, politics, and cultural production.

**LATINO 342-0 Latina and Latino Social Movements (1 Unit)** Histories and ideologies of various US Latina/o social movements. Draws upon historical, ethnographic, autobiographical, and documentary accounts. *Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**LATINO 391-0 Topics in Latina and Latino History (1 Unit)** Historical approach to US Latina/o lives and communities, such as history of Latina/o Chicago, labor history, and immigration. Content varies; may be repeated for credit with different topic. *Historical Studies Distro Area*

**LATINO 392-0 Topics in Latina and Latino Social and Political Issues (1 Unit)** Social and political issues affecting US Latina/o communities. May include quantitative or qualitative methods, or both. Topics may include electoral politics, immigration, and race and demography. Content varies; may be repeated for credit with different topic. *Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LATINO 393-0 Topics in Latina and Latino Text and Representation (1 Unit)** The politics of representation in mainstream and Latina/o media, literature, visual culture, popular music, and performance arts. Content

varies; may be repeated for credit with different topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

#### **LATINO 395-0 Capstone Seminar in Latina & Latino Studies (1-3 Units)**

Advanced course synthesizing the state of current research. Questions the boundaries of Latina/o studies. Contextualizes research and topics in relation to other ethnic studies, gender/queer studies, and diaspora studies. Primarily for majors and graduate students.

Prerequisite: consent of the program director.

#### **LATINO 399-0 Independent Study in Latina and Latino Studies (1 Unit)**

Reading, research, and/or tutorials for students pursuing projects outside the context of regularly offered courses. Prerequisite: consent of instructor.

## **Latina and Latino Studies Major**

The major consists of 12 courses plus a related immersion experience. All must be selected in consultation with the Advisor.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## **12 Required courses for the major:**

- **1 introductory course:** Either LATINO 201-0 Introduction to Latina and Latino Studies or LATINO 203-0 Introduction to Latina & Latino Cultural Studies. If students take both, only one will count towards the major.
- **1 senior-year seminar:** LATINO 395-0 Capstone Seminar in Latina & Latino Studies. All majors are required to enroll.
- **7 core courses in Latina and Latino Studies:**
  - Up to three can be selected from 200 level courses. The remainder must be 300 level courses.
  - One of these core courses must have a focus on history.
  - One of these core courses must have a focus on gender and/or sexuality.
- **3 courses in comparative race and ethnic studies:**
  - Two courses must address the experiences of indigenous populations or other racialized groups in the U.S.
  - One course can address peoples or places in Latin America and/or the Caribbean.
  - At least two courses must be at the 300 level.
  - Courses are typically drawn from, but not limited to, African American Studies, Asian American Studies, Native American and Indigenous Studies, Latin American and Caribbean Studies or American Studies.

## **Required Immersion Experience**

All majors must have an immersion experience with Latina and Latino communities in the United States or a transnational counterpart. Courses for the immersion experience may double-count toward elective and required courses for the major with permission of advisor.

Examples of immersion experiences include but are not limited to:

- Study abroad in Mexico or Latin America
- Chicago Field Studies (p. 267)
- Senior thesis in Latina and Latino Studies
- Independently proposed research or internship
- Civic Engagement Capstone Research Project (SESP 299-1 & SESP 299-2) if it relates to Latina/o communities
- Youth Participatory Action Research
- 2 performance-based courses in theater, dance, communication, sound design or performance with a US Latina/o focus.

## **Independent Study in Latina and Latino Studies**

Students may work on an approved independent study or thesis in Latina and Latino Studies under the supervision of a faculty member (LATINO 399-0 Independent Study in Latina and Latino Studies). Students must submit a proposal, including a reading list, to the program director and receive confirmation from the faculty member supervising the independent study. Seniors may complete a senior thesis regardless of whether or not they qualify for honors nomination.

## **Honors in Latina and Latino Studies**

Majors with strong academic records and an interest in pursuing honors should apply by the end of junior year. The application includes a project proposal and approval from a faculty thesis adviser, who may be from another department. Accepted students complete a senior thesis or project through 2 quarters of independent study (LATINO 399-0 Independent Study in Latina and Latino Studies). Taken in fall and spring of senior year, both quarters of LATINO 399-0 may count toward the major requirements.

Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information see the Latina and Latino Studies Honors (<https://www.latinostudies.northwestern.edu/undergraduate/honors.html>) and Honors in the Major (p. 222).

## **Latina and Latino Studies Minor**

### **6 Required courses for the minor:**

- **1 Introductory course:** Either LATINO 201-0 Introduction to Latina and Latino Studies or LATINO 203-0 Introduction to Latina & Latino Cultural Studies. If students take both, only one will count towards the minor.
- **3 core courses in Latina and Latino Studies:**
  - One course must have a focus on Latina and Latino histories (HISTORY 218-0 or LATINO 218-0; relevant sections of LATINO 391-0)
  - One course must have a focus on Latina and Latino genders and/or sexualities
- **2 courses in comparative race and ethnic studies:**
  - One course must address the experiences of indigenous populations or other racialized groups in the U.S.
  - One course can address peoples or places in Latin America and/or the Caribbean

Courses must be selected with the program director or director of undergraduate studies from an approved list. At least 3 courses must be at the 300 level.

## **Legal Studies**

[legalstudies.northwestern.edu](http://legalstudies.northwestern.edu)

The Legal Studies program promotes the interdisciplinary study of law, legal institutions, and legal processes from social science and humanities perspectives. It is not a “prelaw” program; instead, it examines how legal institutions, actors, and processes fit within a broader social context. In this conception, the law is a social institution that warrants study in its own right and provides an excellent lens through which students may critically examine a variety of themes central to other disciplines (such as race and ethnicity, class, gender, inequality, social change, governance, politics, and culture). The program also prepares students to conduct empirical research and theoretical inquiries across a broad range of contemporary and historical subjects that implicate law.

## **Programs of Study**

- Legal Studies Major (p. 356)
- Legal Studies Minor (p. 356)

**LEGAL\_ST 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LEGAL\_ST 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LEGAL\_ST 206-0 Law and Society (1 Unit)** Introduction to the role of law in American society and the influence of society on law. Courts, the legal profession, law enforcement, inequality, and social change. Taught with SOCIOl 206-0; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 207-0 Legal Studies Research Methods (1 Unit)** Introduction to research methodologies used in interdisciplinary legal studies, including jurisprudence and legal reasoning, qualitative and quantitative social science methods, and historical and textual analysis. SOCIOl 227-0 and LEGAL\_ST 207-0 are taught together; may not receive credit for both courses. Prerequisite: LEGAL\_ST 206-0 or SOCIOl 206-0. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LEGAL\_ST 221-0 Famous American Trials (1 Unit)** Course explores several famous American trials to examine key themes in American political, legal, social, economic, and cultural history. We will focus largely on the twentieth century—a period of multiple “Trials of the Century”—to see how each trial crystallized broader political and social tensions over ethnicity, gender, race, religion, politics, sexuality, and social status. LEGAL\_ST 221-0 and HISTORY 221-0 are taught together; may not receive credit for both. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 248-0 Global Legal History (1 Unit)** This course examines four aspects of global legal history: 1) the imperial roots of international legal regimes and global governance; 2) the transnational history of laws on corporations and intellectual property; 3) the evolution of ideas about personhood and citizenship, including slavery, indigeneity, and artificial intelligence; and 4) the role of state borders and military monopolies.

HISTORY 248-0 and LEGAL\_ST 248-0 are taught together; may not receive credit for both. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline Social and Behavioral Science Foundational Discipl*

**LEGAL\_ST 276-0 Introductory Topics in Legal Studies (1 Unit)** May be repeated for credit with different topics.

**LEGAL\_ST 305-0 American Immigration (1 Unit)** Themes in history of immigration, especially from Europe, Latin America, and Asia. Law, racial formation, acculturation, transnational and international contexts, competing notions of citizenship. HISTORY 305-0 and LEGAL\_ST 305-0 are taught together; may not receive credit for both courses. Prerequisite: Course is reserved to undergraduates only. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 308-0 Sociology of Law (1 Unit)** Sociological analysis of legal institutions such as courts, the police, and lawyers. Law, inequality, and social change. Taught with SOCIO 318-0; may not receive credit for both courses. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 309-0 Political Theories of the Rule of Law (1 Unit)** Key documents and debates in the development of theories of law and jurisprudence. From Aeschylus to contemporary democratic and legal theories and major court cases on topics ranging from torture to Title IX. POLI\_SCI 309-0 and LEGAL\_ST 309-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**LEGAL\_ST 315-0 Corporation in US Law and Culture (1 Unit)** Tracing the evolution of the corporate person in the United States from the colonial era to the present: both the evolving legal rights and responsibilities of the corporation and the role that corporations have played in the American cultural imagination. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LEGAL\_ST 318-1 Legal and Constitutional History of the United States: Colonial Period to 1850 (1 Unit)** Colonial period - 1850. Development of legal institutions, constitutionalism, law and social change, law and economic development. Taught with HISTORY 318-1; may not receive credit for both courses. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 318-2 Legal and Constitutional History of the United States: Since 1850 (1 Unit)** 1850 - present. Law in industrial society: administration, race relations, corporations, environmental protection, civil liberties. Taught with HISTORY 318-2; may not receive credit for both courses. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 320-0 The Fourteenth Amendment (1 Unit)** The Fourteenth Amendment's role in defining and protecting citizenship, privileges and immunities, due process, and equal protection from its nineteenth-century origins to the present. HISTORY 320-0 and LEGAL\_ST 320-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area*

**LEGAL\_ST 331-0 Politics of the Supreme Court (1 Unit)** Operation of appellate courts, with emphasis on the US Supreme Court. Decision making by appellate courts and the development of public policy. Prerequisite: POLI\_SCI 220-0 or POLI\_SCI 230-0. LEGAL\_ST 331-0 and POLI\_SCI 331-0 are taught together; may not receive credit for both courses.

**LEGAL\_ST 332-0 Constitutional Law I (1 Unit)** Introduction to interpretation of the US Constitution by the Supreme Court. Judicial review, federalism, congressional and executive authority, separation of powers. Taught with POLI\_SCI 332-0; may not receive credit for both courses. Prerequisite: POLI\_SCI 220-0 or POLI\_SCI 230-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LEGAL\_ST 333-0 Constitutional Law II: Civil and Political Rights (1 Unit)** Consideration of US Supreme Court decisions dealing with civil and political rights, including equality, freedom of speech, and freedom of religion. LEGAL\_ST 333-0 and POLI\_SCI 333-0 are taught together; may not receive credit for both courses. Prerequisite: POLI\_SCI 220-0 or POLI\_SCI 230-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 340-0 Gender, Sexuality, and the Law (1 Unit)** Examination of the changing role of law in governing gender and sexual relations in America. Legal definitions of gender and sexuality in the household, the marketplace, and the state. GNDR\_ST 340-0 and LEGAL\_ST 340-0 are taught together; may not receive credit for both courses. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 342-0 International Organizations (1 Unit)** An examination of the politics, law, and history of international organizations from the 20th century to the present. Emphasis on the main inter-governmental organizations including the United Nations, the WTO, the WHO, and international courts. POLI\_SCI 342-0 and LEGAL\_ST 342-0 are taught together; may not receive credit for both courses. Prerequisite: POLI\_SCI 240-0 or consent of instructor. *Social Behavioral Sciences Distro Area*

**LEGAL\_ST 347-0 Comparative Race & Ethnicity (1 Unit)** Comparative history of Latinos, Asian Americans, African Americans, and white ethnics in the 20th century United States; role of law, politics, and society in shaping and being shaped by racial and ethnic categories. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 348-0 Race, Politics, and the Law (1 Unit)** Current role of race and racism from multiple disciplinary perspectives. Application to contemporary legal and political issues. How law deals with racial inequality. LEGAL\_ST 348-0 and SOCIO 348-0 are taught together; may not receive credit for both courses. Prerequisite: LEGAL\_ST 206-0, SOCIO 206-0, SOCIO 208-0, LEGAL\_ST 308-0, or SOCIO 318-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 350-0 Psychology and the Law (1 Unit)** Examines the application of psychology to law, including topics such as the insanity defense, criminal profiling, eyewitness testimony, and interrogation. Taught with PSYCH 340-0; may not receive credit for both courses. Prerequisite: PSYCH 110-0. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 356-0 Constitutional Challenges in Comparative Perspective (1 Unit)** Constitutional controversies and resolutions in liberal democracies. Constitutional traditions and governance, rule of law, legitimacy and authority in diverse societies, human rights, social transformation. POLI\_SCI 356-0 and LEGAL\_ST 356-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power,*

*Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LEGAL\_ST 360-0 Animal Law (1 Unit)** Survey of laws, regulations, and cultural norms regarding nonhuman animals and animal ownership in the United States. History of animal protection movement, wildlife regulation, hunting and fishing rights, livestock care and slaughter, animal experimentation, anti-cruelty legislation, and companion animal law. ENVR\_POL 360-0 and LEGAL\_ST 360-0 are taught together; may not receive credit for both courses. Prerequisite: LEGAL\_ST 206-0 or POLI\_SCI 230-0, or instructor approval. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LEGAL\_ST 376-0 Topics in Legal Studies (1 Unit)** May be repeated for credit with different topics.

**LEGAL\_ST 381-0 Children and the Law (1 Unit)** Examines from a developmental perspective research on children's involvement in the legal system as decision makers, witnesses, victims, and perpetrators. Taught with PSYCH 381-0; may not receive credit for both courses. Prerequisites: PSYCH 205-0, PSYCH 244-0. *Social Behavioral Sciences Distro Area*

**LEGAL\_ST 383-0 Gender, Sexuality and The Carceral State (1 Unit)** Traces the rise of the carceral state in the United States from the 1970s to the present through the lens of gender and sexuality. Topics include policing, incarceration, social services, criminal law, and social change. No Prerequisites. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LEGAL\_ST 394-LK Professional Linkage Seminar (1 Unit)** Varied legal topics taught by practitioners. May be repeated for credit with different topics.

**LEGAL\_ST 398-1 Advanced Research Seminar 1 (1 Unit)** Exposure to theoretical and empirical approaches to the study of law and legal institutions in society; preparation of original thesis. Consecutive enrollment required in LEGAL\_ST 398-2. Prerequisites: LEGAL\_ST 206, LEGAL\_ST 207-0 and acceptance to program as major. *Advanced Expression*

**LEGAL\_ST 398-2 Advanced Research Seminar 2 (1 Unit)** Preparation and presentation of original thesis. Prerequisite: LEGAL\_ST 398-1 within the same academic year. *Advanced Expression*

**LEGAL\_ST 399-0 Independent Study (1 Unit)** Readings and conferences on special subjects for students pursuing a specific area of interest in legal studies.

## Legal Studies Major

The Legal Studies major is a 12-course program with 4 core legal studies courses, and 8 approved electives taught in legal studies or drawn from other departments.

Admission to the major is by application only; see the program website (<https://www.legalstudies.northwestern.edu/>) for application details. Before applying, students must complete or be in the process of completing LEGAL\_ST 206-0 Law and Society and at least 1 approved elective. First-year, second-year, and third-year students are welcome to apply.

All legal studies majors complete the advanced research seminar sequence (LEGAL\_ST 398-1 and LEGAL\_ST 398-2) and prepare a thesis as part of the course requirements. LEGAL\_ST 398-1 and LEGAL\_ST 398-2 must be taken in consecutive quarters, and are typically taken in the third or fourth year (as a junior or senior).

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Major Requirements (12 units)</b>	
4 core courses:	
LEGAL_ST 206-0	Law and Society (required for admission to the major)
LEGAL_ST 207-0	Legal Studies Research Methods
LEGAL_ST 398-1 & LEGAL_ST 398-2	Advanced Research Seminar 1 and Advanced Research Seminar 2 (taken during junior or senior year)

8 approved electives taught in legal studies or drawn from other departments

- Approved electives are listed on the program website (<https://www.legalstudies.northwestern.edu/>) each quarter.
- POLI\_SCI 230-0 Introduction to Law in the Political Arena is strongly recommended.
- At most 2 Chicago Field Studies (p. 267) credits may be counted with permission of the legal studies adviser.

## Honors in Legal Studies

Those whose theses and grades meet program criteria are recommended to the college for graduation with honors; students do not need to formally apply for consideration. For more information consult the program director and see Honors in the Major (p. 222).

## Legal Studies Minor

### Minor Requirements (6 units)

- 1 core course: LEGAL\_ST 206-0 Law and Society (required to declare the minor)
- 5 approved electives taught in legal studies or drawn from other departments
  - At least 3 courses must be at the 300 level.
  - At most 2 Chicago Field Studies (p. 267) credits may be counted with permission of the legal studies adviser.

Approved electives are listed on the program website (<https://www.legalstudies.northwestern.edu/>) each quarter.

## Linguistics

[linguistics.northwestern.edu](http://linguistics.northwestern.edu)

Linguistics is the scientific study of language, examining its structures, its social functions, how it is used to convey meaning, how it is acquired and processed in the mind and brain, and how it evolves over timespans of individuals and societies. Knowledge of the structure, origins, and functions of language can provide deep insight into human nature and behavior. The major and minor in linguistics prepare students for careers in technology, consulting, education, marketing and advertising, and behavioral research among many other possibilities. Students also are well prepared for graduate work in linguistics, speech-language pathology, cognitive science, and related disciplines.

Through their Linguistics courses, students will learn about language as a complex system with formal, cognitive, social and physical aspects. Students will explore the deep commonalities and systematic variation among diverse languages and speakers, as observed at multiple levels of linguistic organization, including sounds, words, sentences and discourses. Linguistics students will learn how the scientific method is used to develop theories based on empirical evidence, and refine their ability to communicate the scientific understanding of language and linguistic theories in written and oral presentations.

Linguistics majors are encouraged to participate in faculty research and to develop independent research. Students often enhance their linguistics major through interdisciplinary studies in cognitive science, computer science, communication sciences and disorders, psychology, philosophy, mathematics, or by studying world languages.

## Programs of Study

- Linguistics Major (p. 359)
- Linguistics Minor (p. 359)
- Linguistics BA/MA (p. 359)

All 200-level linguistics courses have an experimental requirement. Students may fulfill this requirement by participating in any combination of two one-hour experiments or video showings. The experiments will be part of ongoing departmental research and illustrate features of language structure and use relevant to topics covered in the core linguistics curriculum. Similarly, the videos will be on topics covered in the core curriculum.

**LING 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LING 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**LING 220-0 Language and Society (1 Unit)** Introduction to linguistic variation and change from a variety of perspectives on social processes. How language can be connected with social group membership and viewed as a tool used in social practice to construct identity. These issues are explored through the quantitative analysis of linguistic variation in a social context. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LING 221-0 Language and Prejudice (1 Unit)** Exploration of language variation in the US context, attitudes toward different language varieties, and the research methods used to study these. Topics include linguistic prejudice and discrimination, language ideologies, and language and the law. *Ethics Values Distro Area*

**LING 222-0 Language, Politics, and Identity (1 Unit)** Role of language in constructing, preserving, and manipulating political and national identities. Topics include language discrimination, linguistic nationalism, language and religion, alphabet issues, dialect issues. Regional content varies. LING 222-0 and SLAVIC 222-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**LING 223-0 Language & Gender (1 Unit)** Exploration of socially and linguistically significant differences in the language used by/about/to

men and women, focusing on the role of language in constructing gender as part of local communities of practice. Taught with GNDR\_ST 234-0; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**LING 250-0 Sound Patterns in Human Language (1 Unit)** Introduction to phonetics and phonology. Description and classification of speech sounds in terms of articulation, acoustics, and perception. Similarities and differences of sound patterns across languages. Introduction to speech technology. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**LING 260-0 Formal Analysis of Words & Sentences (1 Unit)** Formal structure of words (morphology) and sentences (syntax) in natural language. Biological basis of human language. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**LING 270-0 Meaning (1 Unit)** How information is encoded in words and sentences and how speakers and listeners use language to communicate. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**LING 300-0 Topics in Linguistics (1 Unit)**

Topics in linguistic theory. Content varies. May be repeated for credit with different topic.

**LING 312-0 Experimental Sociolinguistics (1 Unit)**

Experimental approaches to the social meaning of language. Discussion of sociolinguistic research questions best suited to the use of experimental methods. Investigation of theoretical and methodological contributions of experimental work to sociolinguistic theory. Social inferences based on language, social expectations' influence on linguistic perception, roles of experiences, stereotypes and attitudes on language, awareness and control in sociolinguistic perception.

Prerequisite: LING 220 or 250; graduate standing or consent of instructor. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**LING 315-0 Experimental Approaches to Word Form Processing (1 Unit)**

Experimental techniques and theoretical models for analyzing perception and production of spoken and written word forms. Access to the mental lexicon in perception and production.

Prerequisite: any 200 level course in linguistics.

*Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**LING 316-0 Experimental Syntax (1 Unit)**

Experimental methodologies and theories of sentence comprehension. Studies of syntactic structures in sentence comprehension.

Prerequisite: any 200 level course in linguistics.

*Social Behavioral Sciences Distro Area*

**LING 317-0 Experimental Pragmatics (1 Unit)**

Experimental methodologies for analyzing the role of context in utterance production and comprehension. Taught with PSYCH 460-0.

Prerequisite: any 200-level course in linguistics or consent of instructor. *Social Behavioral Sciences Distro Area*

**LING 320-0 Sociolinguistics (1 Unit)**

Overview of classic and contemporary work in sociolinguistics. How quantitative methods in linguistics can be coupled with social theoretic insights to engage questions in linguistic variation and change, stylistic practice, how language reflects, reinforces, or contests social inequalities.

Prerequisite: any 200 level course in linguistics; graduate standing or consent of instructor.

*Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines U.S. Perspectives on Power, Justice, and Equity*

**LING 321-0 Bilingualism (1 Unit)**

Cognitive, linguistic, neuroscientific, and computational aspects of the acquisition, representation, and processing of two or more languages in an individual's mind/brain.

Prerequisite: any 200 level course in linguistics.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

**LING 327-0 Language & Sexuality (1 Unit)** The use of language to construct sexual identity, focusing on the language of and about members of LGBTQ+ community. Topics include heteronormativity, identity labels and categories, gender vs. sex vs. sexuality, and cross-cultural sexual diversity. Taught with LING 327-0; may not receive credit for both courses. Prerequisite: any 200-level course in linguistics or consent of instructor.

**LING 330-0 Research Methods in Linguistics (1 Unit)**

Methods of linguistic data collection, management, and analysis with an emphasis on the use of computational, experimental, and statistical methods.

Prerequisite: any 200 level course in linguistics, graduate standing or consent of instructor.

*Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area Social Behavioral Sciences Distro Area*

**LING 331-0 Text Processing for Linguists (1 Unit)**

A practical introduction to programming and the analysis of natural language text for students with little-to-no programming background. Students will learn Unix command line tools, basic programming in Python, concepts like abstraction and decomposition, how to clean and organize linguistic datasets, and methods from computational linguistics. In their final project, students curate and analyze a new dataset.

*Formal Studies Distro Area*

**LING 334-0 Introduction to Computational Linguistics (1 Unit)**

Hands-on introduction to computational methods in empirical linguistic analysis and natural language processing. Topics include language modeling, text classification, linguistic annotation, and computational semantics. Students will implement and apply computational models to real linguistic datasets, and conclude the course with a final project. Prerequisites: COMP\_SCI 110-0 or LING 331-0, or consent of instructor. Programming experience required.

*Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**LING 341-0 Language Typology (1 Unit)**

A comparison of varying and universal features of the world's languages. Prerequisite: any 200 level course in linguistics, graduate standing or consent of instructor.

*Formal Studies Distro Area*

**LING 342-0 Structure of Various Languages (1 Unit)**

Phonological, morphological, or syntactic structure of a particular language. May be repeated for credit with change in language. Prerequisite: any 200 level course in linguistics, graduate standing or consent of instructor.

*Formal Studies Distro Area*

**LING 350-0 Fundamentals of Laboratory Phonology (1 Unit)**

Sound patterns of diverse languages and their expression in articulatory and acoustic phonetics. Syllable structure, phonotactics, morpho-phonological alternation, stress. Fundamentals of laboratory methods and the quantitative analysis of speech data.

Prerequisite: any 200-level Linguistics course or consent of instructor.

*Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**LING 360-0 Fundamentals of Syntax (1 Unit)**

Fundamental principles of theoretical syntax. Phrase structure, argument structure, movement operations. Emphasis on argumentation, hypothesis formation and testing, and analytic methods.

Prerequisite: LING 260-0.

*Formal Studies Distro Area*

**LING 363-0 Making a Dictionary: The Northwestern Project (1 Unit)**

Creation of an online dictionary of Northwestern jargon, slang, etc. Learning about the connection between language, society, and identity; sociolinguistic fieldwork; lexicography; politics of dictionaries; culture and power of book form vs. digital. LING 363-0 and SLAVIC 322-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**LING 370-0 Fundamentals of Meaning (1 Unit)**

Theoretical approaches to the study of linguistic meaning. Topics include word meaning, argument and event structure, sentence meaning, truth conditions, and inference types (e.g., entailment, implicature, presupposition). Prerequisite: any 200 level course in linguistics, graduate standing or consent of instructor.

*Formal Studies Distro Area*

**LING 371-0 Reference (1 Unit)** Linguistic and philosophical approaches to the study of reference, focusing on the role of context in the use and interpretation of referring expressions. Topics include definiteness, common ground, genericity, deixis, and anaphora. Prerequisite: any 200-level course in linguistics, a course in philosophy of language, or consent of instructor. *Formal Studies Distro Area*

**LING 372-0 Pragmatics (1 Unit)**

Introduction to extra-semantic meaning, focusing on the role of context in utterance production and interpretation. Topics include the semantics-pragmatics boundary, implicature, presupposition, speech acts, reference, and information structure.

Prerequisite: any 200-level course in linguistics or consent of instructor.

**LING 373-0 Implicature (1 Unit)**

An interdisciplinary approach to the study of extra-semantic meaning, drawing on primary readings from linguistics, philosophy, and psychology. Topics include conversational and conventional implicature, explicature, implicature, and the semantics-pragmatics boundary.

Prerequisite: any 200-level course in linguistics or consent of instructor.

*Social Behavioral Sciences Distro Area*

**LING 380-0 Spoken English for Nonnative Speakers (0 Unit)**

Conversational English addressing all oral language skills; primarily for international graduate students and postdoctoral trainees who are nonnative speakers of English, or native speakers of an English dialect not commonly used in the 50 US states. Content varies.

**LING 381-0 Written English for Nonnative Speakers (0 Unit)**

Written argumentation skills and all aspects of academic writing; primarily for international graduate students and postdoctoral trainees who are nonnative speakers of English, or native speakers of an English dialect not commonly used in the 50 US states. Content varies.

**LING 398-0 Undergraduate Seminar in Linguistics (1 Unit)** By invitation of the department. For students of superior ability, with choice of topic left to the group.

**LING 399-0 Independent Study (1 Unit)**

## Linguistics Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Department Courses (12 units)</b>	
<i>Introductory courses (2 units)</i>	
Any two 200-level courses in Linguistics	
<i>Methods courses (3 units)</i>	
1 course from each of the following categories:	
<i>Statistical</i> <sup>1</sup>	
STAT 202-0	Introduction to Statistics and Data Science
STAT 210-0	Introduction to Probability and Statistics
<i>Computational</i>	
COMP_SCI 110-0	Introduction to Computer Programming
COMP_SCI 111-0	Fundamentals of Computer Programming
<i>Experimental</i>	
COG_SCI 210-0	Language and the Brain
LING 312-0	Experimental Sociolinguistics
LING 315-0	Experimental Approaches to Word Form Processing
LING 316-0	Experimental Syntax
LING 317-0	Experimental Pragmatics
LING 321-0	Bilingualism
<i>Advanced courses (7 units)</i>	
7 additional courses beyond the 200 level <sup>2</sup>	

<sup>1</sup> PSYCH 201 may substitute for either STAT 202-0 or STAT 210-0 with DUS approval

<sup>2</sup> Only 1 of the 7 may be LING 398-0 Undergraduate Seminar in Linguistics or LING 399-0 Independent Study.

## Adjunct major in MMSS

Linguistics majors pursuing an adjunct major in Mathematical Methods in the Social Sciences (p. 360) (MMSS) may double-count the following MMSS courses towards linguistics major requirements (for triple major limitations see MMSS Adjunct Major (p. 361)):

- MMSS 311-1 and MMSS 311-2 may be counted as 300-level advanced courses.

## Honors in Linguistics

The Honors Program in Linguistics gives outstanding senior majors an opportunity to design and carry out an independent research project on a topic of their choice, under close supervision of faculty. Students with an outstanding academic record in their Linguistics major coursework and overall are invited to apply to the honors program in the spring before their senior year (a GPA of 3.5 in coursework toward the Linguistics major is expected). Interested students should prepare a research project proposal in consultation with the faculty member who will oversee the project, and present this proposal, including the identification of a second reader, to the Director of Undergraduate Studies for review. Proposals are

due one week after the completion of the spring quarter before senior year. Proposals that are approved by the Director of Undergraduate Studies will be pursued during senior year.

During senior year, honors students undertake the research and writing of an honors thesis. The thesis must constitute an original contribution to linguistic knowledge and must consist substantially of independent research performed by the candidate. Honors students are also required to take 2 additional Linguistics courses beyond those required for the major during senior year. These courses may be selected from LING 398-0 Undergraduate Seminar in Linguistics, LING 399-0 Independent Study, and 400-level courses.

Students whose projects, theses, and grades meet program criteria are recommended to the college for graduation with honors. For more information consult the Director of Undergraduate Studies and see the Linguistics Honors (<https://linguistics.northwestern.edu/undergraduate/honors-program.html>) website.

## Linguistics Minor

The minor in linguistics broadens the academic background of students majoring in related fields such as cognitive science, communication sciences and disorders, psychology, philosophy, foreign languages, mathematics, and computer science by offering training in the theory and methods of linguistic analysis.

Course	Title
<b>Minor Requirements (6 units)</b>	
<i>Introductory courses (2 units)</i>	
Any two 200-level courses in Linguistics	
<i>Methods course (1 unit). Any one of the following:</i>	
COG_SCI 210-0	Language and the Brain
LING 312-0	Experimental Sociolinguistics
LING 315-0	Experimental Approaches to Word Form Processing
LING 316-0	Experimental Syntax
LING 317-0	Experimental Pragmatics
LING 321-0	Bilingualism
<i>Advanced courses (3 units)</i>	
3 additional linguistics courses beyond the 200 level <sup>1</sup>	

<sup>1</sup> Only 1 of the 3 may be LING 398-0 Undergraduate Seminar in Linguistics or LING 399-0 Independent Study.

## Linguistics BA/MA

Students with a strong record in their major courses and an interest in graduate study are eligible to apply for the BA/MA program in linguistics when they are within 4 courses of completing all Weinberg College requirements for the BA degree. Students must complete all requirements for the BA degree along with the course requirements for the Linguistics major. Linguistics majors interested in the combined BA/MA program must meet with the Linguistics Director of Undergraduate Studies and Director of Graduate Studies no later than the end of their junior year.

Information about degree requirements can be found in the Graduate Catalog section describing the combined BA/MA program in Linguistics (<https://catalogs.northwestern.edu/tgs/linguistics/linguistics-bach-mast/>).

# Materials Science

[mccormick.northwestern.edu/materials-science](http://mccormick.northwestern.edu/materials-science)

Materials science is the study of processing-structure-property relationships in materials of importance to society, such as metals, ceramics, polymers, semiconductors, biomaterials, nanomaterials, and their combinations (composites). Materials scientists pay special attention to “microstructure”—i.e., how materials are constructed on the microscopic, submicroscopic, and even the nanometer levels, and how this affects their properties. Given the wide range of uses for materials, their properties of interest are similarly broad, from mechanical (e.g., strength) to electrical (e.g., semiconduction) to biological (e.g., biocompatibility).

By offering the opportunity to study materials science within the context of the liberal arts and sciences, the Materials Science Program in Weinberg College is distinct from the program in the Department of Materials Science and Engineering in the Robert R. McCormick School of Engineering and Applied Science. The Weinberg program has strong connections with Weinberg’s physical and biological sciences departments in addition to its links with McCormick’s various engineering disciplines.

## Program of Study

- Materials Science Minor (p. 360)

These courses are offered by the Robert R. McCormick School of Engineering and Applied Sciences. See Materials Science and Engineering (p. 198).

## Materials Science Minor

Course	Title
<b>Program Courses (6 units)</b>	
MAT_SCI 201-0 or MAT_SCI 301-0	Introduction to Materials Science and Engineering Principles
MAT_SCI 315-0	Phase Equilibria & Diffusion of Materials
MAT_SCI 316-1 MAT_SCI 316-2	Microstructural Dynamics
2 other 300-level materials science courses <sup>1</sup>	
<b>Foundations in Mathematics and Science (units depend on chemistry and mathematics sequences taken)</b>	
MATH 220-1 & MATH 220-2 or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Differential Calculus and Single-Variable Integral Calculus Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 230-1 & MATH 230-2	Multivariable Differential Calculus and Multivariable Integral Calculus (or equivalent) <sup>2</sup>
CHEM 110-0 & CHEM 131-0 & CHEM 132-0 or CHEM 151-0 & CHEM 152-0 or CHEM 171-0 & CHEM 172-0	Quantitative Problem Solving in Chemistry and Fundamentals of Chemistry I and Fundamentals of Chemistry II General Chemistry I and General Chemistry II Advanced General Inorganic Chemistry and Advanced General Physical Chemistry
1 course in thermodynamics:	
MAT_SCI 314-0	Thermodynamics of Materials

or CHEM 342-1 or PHYSICS 332-0	Thermodynamics Statistical Mechanics
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<sup>1</sup> Excluding MAT\_SCI 394-0 Honors Project in Materials Science, MAT\_SCI 396-1 Senior Project in Materials Science and Engineering, MAT\_SCI 396-2 Senior Project in Materials Science and Engineering, MAT\_SCI 399-0 Projects; MAT\_SCI 395-0 Special Topics in Materials Science and Engineering may count only with permission of the director of undergraduate studies.

<sup>2</sup> e.g., MATH 290-2 MENU: Linear Algebra and Multivariable Calculus, MATH 290-3 MENU: Linear Algebra and Multivariable Calculus or MATH 291-2 MENU: Intensive Linear Algebra and Multivariable Calculus, MATH 291-3 MENU: Intensive Linear Algebra and Multivariable Calculus.

## Mathematical Methods in the Social Sciences

[mmss.northwestern.edu](http://mmss.northwestern.edu)

MMSS is an adjunct major and must be completed with a stand-alone major in a social science or other approved area. See the Mathematics Second Major or Minor for MMSS Students (p. 372) for information about the major or the minor in mathematics when combined with the MMSS adjunct major; see the program website (<https://www.mmss.northwestern.edu/undergraduate/>) and relevant sections of this Catalog for information on adjustments to requirements in other majors for students in MMSS.

A central feature of modern social, behavioral, managerial, and policy sciences is the use of mathematics, statistics, and computers, both as languages and as methods of abstraction and analysis. Most undergraduate programs in the social sciences do not incorporate mathematical approaches in an organized and consistent manner, however. The Mathematical Methods in the Social Sciences Program (MMSS) was created to give undergraduate students an opportunity to combine the study of social sciences with training in formal analytical methods.

Key objectives students should develop from graduating from the MMSS Program

- Understand normative principles of Social Science and identify key tradeoffs in practical policy questions.
- Develop fluency in the use of formal models to capture and quantify essential themes.
- Understand the limitations of Social Science data and learn to recognize the appropriate empirical tools for overcoming these limitations.
- Formulate and execute original research questions.
- Communicate in both formal and informal language the key ideas in practical policy debates.

MMSS students pursue a double course of study: a common mathematics/quantitative methods sequence and the social science major of their choice. (In some cases, students choose their joint major from outside the social sciences.) The program is for students with high mathematical aptitude and strong interest in social problems and issues, including policy and research implications. It provides excellent preparation for graduate study in social or managerial sciences as well

as for careers requiring quantitative skills and a solid background in the social sciences.

In the first two years of the program, students enroll in a coordinated sequence of 12 1-quarter courses (two courses per quarter) covering mathematical methods and their applications in the social sciences. These courses are open only to MMSS students and are taught at an appropriately advanced level. In senior year, all MMSS students participate in a senior seminar in which they write a thesis. There are no other required MMSS courses, but students must fulfill the requirements of their joint major.

Admission to the MMSS program is very selective and is limited to first-year students and to Northwestern sophomores with superior academic records and a demonstrated strong aptitude in mathematics.

A full-year course in calculus is a prerequisite for admission. High school students fulfilling this prerequisite are encouraged to enter the program as first-year students, applying to both Northwestern and the program.

## Sophomore Entry to MMSS

To be considered for admission as sophomores, students lacking calculus should complete at least two quarters of calculus (MATH 220-1 Single-Variable Differential Calculus and MATH 220-2 Single-Variable Integral Calculus) in the first year of college. Those with sufficient background in calculus are advised to register for a 200-level calculus/linear algebra sequence in the first year such as:

Course	Title
MATH 226-0	Sequences and Series
MATH 230-1	Multivariable Differential Calculus
MATH 230-2	Multivariable Integral Calculus
MATH 240-0	Linear Algebra
MATH 290-1 & MATH 290-2 & MATH 290-3	MENU: Linear Algebra and Multivariable Calculus and MENU: Linear Algebra and Multivariable Calculus and MENU: Linear Algebra and Multivariable Calculus
MATH 291-1 & MATH 291-2 & MATH 291-3	MENU: Intensive Linear Algebra and Multivariable Calculus and MENU: Intensive Linear Algebra and Multivariable Calculus and MENU: Intensive Linear Algebra and Multivariable Calculus
ES_APPM 252-1 & ES_APPM 252-2	Honors Calculus for Engineers and Honors Calculus for Engineers

Students with less mathematics preparation who are admitted to the program after the first year may be required to take all or part of the first-year MMSS math sequence.

Northwestern applicants interested in the program should see Special Admission Programs (p. 11). Current students who wish to be considered for the program should complete an online application at [mmss.northwestern.edu](http://mmss.northwestern.edu).

## Program of Study

- MMSS Adjunct Major (p. 361)

Please note, MMSS students are required to take six mathematics courses/units which include: MATH 285-1, MATH 285-2, MATH 285-3, MATH 385-0, MATH 386-1, and MATH 386-2 in addition to the MMSS course list.

## MMSS Courses

**MMSS 211-1 Social Science Theories & Meth-First Yr (1 Unit)** A fast-paced mathematical treatment of intermediate microeconomics designed for mathematically sophisticated students. No previous training in microeconomics is assumed. Topics covered include consumer and producer behavior in market economies, equilibrium in competitive and monopolistic markets, public goods and externalities, and welfare analysis. *Social Behavioral Sciences Distro Area*

**MMSS 211-2 Social Science Theories & Meth-First Yr (1 Unit)** Game theory.

**MMSS 211-3 Social Science Theories & Meth-First Yr (1 Unit)** Formal models in social science disciplines other than economics. *Social Behavioral Sciences Distro Area*

**MMSS 300-0 Foundations of Mathematical Social Science (1 Unit)**

Introduction to the core mathematical elements of formal Social Science, including Individual Decision Making, Choice Under Uncertainty, Social Choice and Welfare, Efficiency Concepts, and Dynamic Decision-Making.

**MMSS 311-1 Social Science Theories & Meth-2nd Yr (1 Unit)** Advanced game theory.

**MMSS 311-2 Social Science Theories & Meth-2nd Yr (1 Unit)** Advanced formal models in social science disciplines other than economics.

**MMSS 398-1 Senior Seminar (1 Unit)** Senior thesis seminar. *Advanced Expression*

**MMSS 398-2 Senior Seminar (1 Unit)** Senior thesis seminar. *Advanced Expression*

**MMSS 398-3 Senior Seminar (1 Unit)** Senior thesis seminar. *Advanced Expression*

## MMSS Adjunct Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Adjunct Major Requirements (14 units)</b>	
6 first-year courses:	
MMSS 211-1 & MMSS 211-2 & MMSS 211-3	Social Science Theories & Meth-First Yr and Social Science Theories & Meth-First Yr and Social Science Theories & Meth-First Yr
MATH 285-1 & MATH 285-2 & MATH 285-3	Accelerated Mathematics for MMSS and Accelerated Mathematics for MMSS and Accelerated Mathematics for MMSS
6 second-year courses:	
MMSS 300-0	Foundations of Mathematical Social Science
MMSS 311-1 & MMSS 311-2	Social Science Theories & Meth-2nd Yr and Social Science Theories & Meth-2nd Yr
MATH 385-0	Probability and Statistics for MMSS
MATH 386-1 & MATH 386-2	Econometrics for MMSS and Econometrics for MMSS
2 senior-year courses:	
MMSS 398-1 & MMSS 398-2	Senior Seminar and Senior Seminar

or MMSS 398-1      Senior Seminar  
 & MMSS 398-3      and Senior Seminar

## Joint Majors

All adjunct majors require completion of a stand-alone major as well. MMSS students must complete a major in a social science or other approved area. See the Mathematics Second Major or Minor for MMSS Students (p. 372) for information about the major or the minor in mathematics when combined with the MMSS adjunct major; see the program website (<https://www.mmss.northwestern.edu/undergraduate/>) and relevant sections of this Catalog for information on adjustments to requirements in other majors or minors for students in MMSS:

- Anthropology Major (p. 233)
- Data Science Major (p. 443)
- Economics Major (p. 290)
- Linguistics Major (p. 359)
- Political Science Major (p. 404)
- Psychology Major (p. 411)
- Sociology Major (p. 426)
- Statistics Major (p. 440)
- Statistics Minor (p. 442)

## Triple majors

Students wishing to pursue two joint majors with MMSS (i.e. to pursue a triple major) are NOT allowed to double count MMSS courses towards both of their other majors, i.e., MMSS students may only apply the double counting rules to ONE major. In special cases, permission may be given to count some MMSS courses as fulfilling the requirements of two other majors. However, explicit permission must be obtained from the Director of MMSS and from the Directors of Undergraduate Studies of BOTH of the other departments.

## Honors in MMSS

All MMSS students write a senior thesis in MMSS, in another major, or in both. Students should enroll in two units of the MMSS senior seminar. Students must enroll in MMSS 398-1 Senior Seminar, and at least MMSS 398-2 or MMSS 398-3. Students who write an MMSS thesis of sufficiently high quality, and earn sufficiently high grades may be recommended to the college for graduation with honors in MMSS. For more information consult the program director and see Honors in the Major (p. 222).

## Mathematics

[math.northwestern.edu](http://math.northwestern.edu)

Mathematics is celebrated as the “Queen of the Sciences”. It provides the language for science (both natural and social) to understand and predict the world around us. It is used to describe the precise interactions between particles at the atomic level, the motions of planets, the inner workings of computer algorithms and architectures, and the fluctuations in stock prices in modern markets. Today’s deep discoveries in pure mathematics provide frameworks for the science and technology of tomorrow.

Mathematics studies the concepts of quantity and number, geometry and shape, and functions and change. It provides an approach to problem solving which emphasizes abstraction as a key tool, where rigor and

intuition come together. Students majoring or minoring in mathematics have the opportunity to learn about its diverse applications, as well as acquiring an understanding of both the foundations and frontiers of the discipline.

The Department of Mathematics (<https://www.math.northwestern.edu>) offers a major and a minor in mathematics. The mathematics major and minor are flexible, accommodating students interested in the foundations of the modern mathematical sciences, those primarily interested in applications to the natural or social sciences, and those interested in management or engineering.

Students with strong preparation who seek an early exposure to rigorous mathematics should consider participating in Mathematical Experience for Northwestern Undergraduates (MENU) (<https://math.northwestern.edu/undergraduate/menu/>). The department also encourages well-prepared undergraduate students to enroll in its graduate courses.

## Course Recommendations

### First-Year Placement

For information about course placement for first-year students, see the First Year Focus (<https://www.math.northwestern.edu/undergraduate/first-year-focus/>) webpage.

### Mathematical Experience for Northwestern Undergraduates (MENU)

Mathematical Experience for Northwestern Undergraduates (MENU) (<https://math.northwestern.edu/undergraduate/menu/>) is a flexible program of challenging courses designed to provide qualified undergraduates with a thorough foundation in mathematics suitable for advanced study in mathematics and its applications across a wide range of disciplines.

MENU offers students an opportunity to expand their mathematical knowledge while retaining flexibility about their majors. Although MENU attracts participants with a variety of interests, the program is especially well-suited for students considering a major in mathematics, the natural sciences, or economics. The Director of MENU (<https://www.math.northwestern.edu/undergraduate/advising/>) is available to advise all MENU participants regardless of major.

### The First Year

During the first year MENU participants typically enroll in one of two yearlong sequences:

Course	Title
MATH 290-1	MENU: Linear Algebra and Multivariable Calculus
& MATH 290-2	and MENU: Linear Algebra and Multivariable Calculus
& MATH 290-3	and MENU: Linear Algebra and Multivariable Calculus
or MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus
& MATH 291-2	and MENU: Intensive Linear Algebra and Multivariable Calculus
& MATH 291-3	and MENU: Intensive Linear Algebra and Multivariable Calculus
	and MENU: Intensive Linear Algebra and Multivariable Calculus

Each sequence provides a strong background in linear algebra and multivariable calculus. In contrast to our standard mathematics courses, these sequences develop linear algebra before multivariable calculus and use linear algebra as an important tool in the study of multivariable calculus. MATH 291-1 emphasizes theory and

proofs and is appropriate for students who are particularly skilled in and passionate about mathematics. Students may transfer between MATH 290-1 and MATH 291-1 with permission from the Director of MENU (<https://www.math.northwestern.edu/undergraduate/advising/>).

### **MENU and MATH 226-0**

MENU participants who do not have credit for MATH 226-0 should consider taking MATH 226-0, which is a prerequisite for most further courses in differential equations, probability, and analysis. MENU participants who anticipate taking ECON 381-1 should note that MATH 314-0 is prerequisite for ECON 381-1, and MATH 226-0 is prerequisite for MATH 314-0. MATH 226-0 is also a required course for the mathematics major, the mathematics minor, the statistics major, and the statistics minor.

### **Beyond the First Year**

After the first year MENU participants may choose among four upper-level MENU sequences:

Course	Title
MATH 311-1 & MATH 311-2 & MATH 311-3	MENU: Probability and Stochastic Processes and MENU: Probability and Stochastic Processes and MENU: Probability and Stochastic Processes
MATH 321-1 & MATH 321-2 & MATH 321-3	MENU: Real Analysis and MENU: Real Analysis and MENU: Real Analysis
MATH 331-1 & MATH 331-2 & MATH 331-3	MENU: Abstract Algebra and MENU: Abstract Algebra and MENU: Abstract Algebra
MATH 360-1 & MATH 360-2	MENU: Applied Analysis and MENU: Applied Analysis

or they may enroll in other advanced mathematics courses.

### **Participating in MENU**

Participation in MENU is by invitation only. Students who earn a score of at least 4 on the Advanced Placement Calculus BC examination should automatically receive an invitation to participate. A student who does not automatically receive an invitation can obtain one from the Director of MENU (<https://www.math.northwestern.edu/undergraduate/advising/>) if he or she is

- an international student who has completed single variable calculus, or
- has completed a college-level sequence in single variable calculus with high grades, or
- has earned a score of 7 on the International Baccalaureate Higher-Level Mathematics Examination.

Students who excel in MATH 220-1 or MATH 220-2 may consult the Director of MENU (<https://www.math.northwestern.edu/undergraduate/advising/>) about continuing their studies of mathematics in MENU. Further information is available at Mathematical Experience for Northwestern Undergraduates (MENU) (<https://math.northwestern.edu/undergraduate/menu/>).

### **Mathematics and Computer Science**

Students interested in mathematics and computer science should consider the following courses and course sequences:

Course	Title
MATH 300-0	Foundations of Higher Mathematics
MATH 306-0	Combinatorics & Discrete Mathematics
MATH 308-0	Graph Theory
MATH 310-1 & MATH 310-2	Probability and Stochastic Processes and Probability and Stochastic Processes
or MATH 311-1 & MATH 311-2	MENU: Probability and Stochastic Processes and MENU: Probability and Stochastic Processes
MATH 334-0	Linear Algebra: Second Course
MATH 336-1	Introduction to the Theory of Numbers
COMP_SCI 336-0	Design & Analysis of Algorithms
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 349-0	Machine Learning
IEMS 303-0	Statistics

### **Mathematics and Economics**

Students interested in mathematics and economics should consider the following courses and course sequences:

Course	Title
MATH 314-0 & MATH 310-2 & MATH 310-3	Probability and Statistics for Econometrics and Probability and Stochastic Processes and Probability and Stochastic Processes
or MATH 314-0 & MATH 311-2 & MATH 311-3	Probability and Statistics for Econometrics and MENU: Probability and Stochastic Processes and MENU: Probability and Stochastic Processes
MATH 320-1 & MATH 320-2 & MATH 320-3	Real Analysis and Real Analysis and Real Analysis
or MATH 321-1 & MATH 321-2 & MATH 321-3	MENU: Real Analysis and MENU: Real Analysis and MENU: Real Analysis
ECON 331-0	Economics of Risk and Uncertainty
ECON 380-1 & ECON 380-2	Game Theory and Game Theory
ECON 381-1 & ECON 381-2	Econometrics and Econometrics

Enrolling in MATH 311-2 after MATH 314-0 requires permission from the Department of Mathematics (<https://www.math.northwestern.edu>).

### **Actuarial Science**

The following courses and course sequences are essential for students pursuing a credential in actuarial science:

Course	Title
ECON 381-1 & ECON 381-2	Econometrics and Econometrics
or MATH 386-1 & MATH 386-2	Econometrics for MMSS and Econometrics for MMSS
ECON 360-1	Foundations of Corporate Finance Theory
or KELLG_FE 310-0	Principles of Finance
or CIV_ENV 205-0	Economics and Finance for Engineers
ECON 310-1	Microeconomics
ECON 311-0	Macroeconomics

To prepare for Exam P by the Society of Actuaries or Exam 1 by the Casualty Actuarial Society students should consider the following course sequences:

Course	Title
MATH 314-0	Probability and Statistics for Econometrics
& MATH 310-2	and Probability and Stochastic Processes
& MATH 310-3	and Probability and Stochastic Processes
or MATH 314-0	Probability and Statistics for Econometrics
& MATH 311-2	and MENU: Probability and Stochastic Processes
& MATH 311-3	and MENU: Probability and Stochastic Processes

Enrolling in MATH 311-2 after MATH 314-0 requires permission from the Department of Mathematics (<https://www.math.northwestern.edu>).

Students interested in actuarial science should also consider the following courses and course sequences:

Course	Title
MATH 366-0	Mathematical Models in Finance
BUS_INST 301-0	Accounting
STAT 320-2	Statistical Theory & Methods 2
& STAT 320-3	and Statistical Theory & Methods 3
STAT 350-0	Regression Analysis
STAT 351-0	Design and Analysis of Experiments
STAT 352-0	Nonparametric Statistical Methods
STAT 355-0	Analysis of Qualitative Data
STAT 359-0	Topics in Statistics

## Programs of Study

- Mathematics Major (p. 369)
- Mathematics Minor (p. 371)
- Mathematics Second Major for ISP Students (p. 372)
- Mathematics Second Major or Minor for MMSS Students (p. 372)

The Director of Undergraduate Studies in Mathematics (<https://www.math.northwestern.edu/undergraduate/advising/>) may waive prerequisites for mathematics courses. No waived prerequisite course is eligible for credit after a student completes another course for which it is prerequisite without permission from the Department of Mathematics (<https://www.math.northwestern.edu>). MATH 100-0 and MATH 110-0 are not available for credit after completing a course at the 200 level or higher. See the course descriptions for other restrictions. Students following the Undergraduate Catalog 2022-2023 or earlier edition may be able to satisfy the Formal Studies distribution requirement with a single high-level mathematics course; check catalog archives for policies.

**MATH 100-0 Quantitative Reasoning (1 Unit)** Analyzing topical, real-life problems from a quantitative perspective. Solving multistep problems using elementary algebra, probability, and statistics. Students may not receive credit for MATH 100-0 after earning credit for a 200-level MATH course or higher. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 100-BR Quantitative Reasoning (0.5 Unit)** For participants in Bridge I summer program. Analyzing topical, real-life problems from a quantitative perspective. Solving multistep problems using elementary algebra, probability, and statistics. Taken with HUM 100-1-BR.

**MATH 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**MATH 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written

communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**MATH 110-0 Introduction to Mathematics (1 Unit)** Exploration of the beauty of mathematics through a study of the patterns and properties of the natural numbers. Topics include counting, probability, prime numbers, the Euclidean algorithm, and unique factorization. For students with minimal mathematical background. Students may not receive credit for MATH 110-0 after earning credit for a 200-level MATH course or higher. *Formal Studies Distro Area*

**MATH 202-0 Finite Mathematics (1 Unit)** Selected topics from elementary linear algebra and its applications, finite probability, and elementary statistics. For students majoring in the behavioral sciences. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 211-0 Short Course in Calculus (1 Unit)** Elements of differential and integral calculus. Students may not receive credit for both MATH 211-0 and any of MATH 212-0 (former), MATH 213-0 (former), MATH 214-0 (former), MATH 218-1, MATH 218-2, MATH 218-3, MATH 220-0 (former), MATH 220-1, MATH 220-2, MATH 224-0 (former), or MATH 226-0. Not suitable for students planning to major in mathematics, the natural sciences, or economics. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 218-1 Single-Variable Calculus with Precalculus (1 Unit)** Functions and graphs. Limits. Continuity. Differentiation. Linearization. Students may not receive credit for both MATH 218-1 and any of MATH 211-0, MATH 212-0 (former), MATH 220-0 (former), or MATH 220-1. Prerequisite: consent of the department. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 218-2 Single-Variable Calculus with Precalculus (1 Unit)** Extreme value theorem, mean value theorem, and curve-sketching. Related rates. Optimization. Transcendental and inverse functions. Students may not receive credit for both MATH 218-2 and any of MATH 211-0, MATH 212-0 (former), MATH 220-0 (former), or MATH 220-1. Prerequisite: MATH 218-1 or consent of the department. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 218-3 Single-Variable Calculus with Precalculus (1 Unit)** Definite integrals, antiderivatives, and the fundamental theorem of calculus. Areas and volumes. Techniques of integration, numerical integration, and improper integrals. First-order linear and separable ordinary differential equations. Students may not receive credit for both MATH 218-3 and any of MATH 213-0 (former), MATH 220-2, or MATH 224-0 (former). Prerequisite: MATH 218-2 or consent of the department. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 218-SG-1 Peer-Guided Study Group: Single-Variable Calculus with Precalculus (0 Unit)** Peer-guided study group for students enrolled in MATH 218-1. Meets weekly in small groups with a peer facilitator, to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 218-SG-2 Peer-Guided Study Group: Single-Variable Calculus with Precalculus (0 Unit)** Peer-guided study group for students enrolled in MATH 218-2. Meets weekly in small groups with a peer facilitator, to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 218-SG-3 Peer-Guided Study Group: Single-Variable Calculus with Precalculus (0 Unit)** Peer-guided study group for students enrolled in MATH 218-3. Meets weekly in small groups with a peer facilitator, to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 220-1 Single-Variable Differential Calculus (1 Unit)** Limits. Differentiation. Linear approximation and related rates. Extreme value theorem, mean value theorem, and curve-sketching. Optimization. Students may not receive credit for both MATH 220-1 and any of MATH 211-0, MATH 212-0 (former), MATH 213-0 (former), MATH 218-1, MATH 218-2, or MATH 220-0 (former). *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 220-2 Single-Variable Integral Calculus (1 Unit)** Definite integrals, antiderivatives, and the fundamental theorem of calculus. Transcendental and inverse functions. Areas and volumes. Techniques of integration, numerical integration, and improper integrals. First-order linear and separable ordinary differential equations. Students may not receive credit for both MATH 220-2 and any of MATH 213-0 (former), MATH 214-0 (former), MATH 218-3, or MATH 224-0 (former). Prerequisite: MATH 218-2 or MATH 220-0 (former) or MATH 220-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 220-MG-1 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in MATH 220-1. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**MATH 220-MG-2 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in MATH 220-2. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**MATH 220-SG-1 Peer-Guided Study Group: Single-Variable Differential Calculus (0 Unit)** Peer-guided study group for students enrolled in MATH 220-1. Meets weekly in small groups with a peer facilitator to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 220-SG-2 Peer-Guided Study Group: Single-Variable Integral Calculus (0 Unit)** Peer-guided study group for students enrolled in MATH 220-2. Meets weekly in small groups with a peer facilitator to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 226-0 Sequences and Series (1 Unit)** Infinite sequences. Infinite series and convergence tests. Power series, Taylor series, Taylor polynomials and error. Complex numbers. Second-order linear ordinary differential equations and power series solutions. Students may not receive credit for both MATH 226-0 and any of MATH 214-0 (former), MATH 224-0 (former), or MATH 281-2. Prerequisite: MATH 218-3 or MATH 220-2. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 228-1 Multivariable Differential Calculus for Engineering (1 Unit)** Vectors, vector functions, partial derivatives, Taylor polynomials, and optimization. Emphasis on engineering applications. For McCormick School of Engineering students only. Students may not receive credit for both MATH 228-1 and any of MATH 230-0 (former), MATH 230-1, MATH 281-1, MATH 285-2, MATH 290-2, MATH 291-2, or ES\_APPM 252-1. Prerequisite: MATH 218-3 or MATH 214-0 (former) or MATH 220-2 or MATH 224-0 (former). *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 228-2 Multivariable Integral Calculus for Engineering (1 Unit)** Multiple integration: double integrals, triple integrals, and change of variables. Vector calculus: vector fields, line integrals, surface integrals, curl and divergence, Green's theorem, Stokes' theorem, and the divergence theorem. Emphasis on engineering applications. For McCormick School of Engineering students only. Students may not

receive credit for both MATH 228-2 and any of MATH 230-2, MATH 234-0 (former), MATH 281-2, MATH 285-3, MATH 290-3, MATH 291-3, or ES\_APPM 252-2. Prerequisite: MATH 228-1 or MATH 230-0 (former) or MATH 230-1 or MATH 281-1 or MATH 285-2 or MATH 290-2 or MATH 291-2 or ES\_APPM 252-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 228-SG-1 Peer-Guided Study Group: Multivariable Calculus for Engineering (0 Unit)** Peer-guided study group for students enrolled in MATH 228-1. Meets weekly in small groups with a peer facilitator to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 230-1 Multivariable Differential Calculus (1 Unit)** Vectors, vector functions, partial derivatives, and optimization. Not open to students in the McCormick School of Engineering. Students may not receive credit for both MATH 230-1 and any of MATH 228-1, MATH 230-0 (former), MATH 281-1, MATH 285-2, MATH 290-2, MATH 291-2, or ES\_APPM 252-1. Prerequisite: MATH 218-3 or MATH 214-0 (former) or MATH 220-2 or MATH 224-0 (former). *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 230-2 Multivariable Integral Calculus (1 Unit)** Multiple integration: double integrals, triple integrals, and the change of variables theorem. Vector calculus: vector fields, line integrals, surface integrals, curl and divergence, Green's theorem, Stokes' theorem, and the divergence theorem. Not open to students in the McCormick School of Engineering. Students may not receive credit for both MATH 230-2 and any of MATH 228-2, MATH 234-0 (former), MATH 281-2, MATH 285-3, MATH 290-3, MATH 291-3, or ES\_APPM 252-2. Prerequisite: MATH 228-1 or MATH 230-0 (former) or MATH 230-1 or MATH 281-1 or MATH 285-2 or MATH 290-2 or MATH 291-2 or ES\_APPM 252-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 230-MG-1 Mentored Study Program (0 Unit)** Study sessions facilitated by undergraduate peer leaders, for students enrolled in MATH 230-1. Meets weekly in small groups to collaboratively review material, solve practice problems, clarify concepts, and enhance study strategies. Enrollment optional. Graded S/U.

**MATH 230-SG-1 Peer-Guided Study Group: Multivariable Differential Calculus (0 Unit)** Peer-guided study group for students enrolled in MATH 230-1. Meets weekly in small groups with a peer facilitator to collaboratively review material, solve practice problems, and clarify concepts. Enrollment optional. Graded S/U.

**MATH 235-0 Series and Multiple Integrals (1 Unit)** Sequences and series, and convergence tests. Power series, Taylor polynomials and error. Double integrals, triple integrals, and change of variables. Students may receive credit for only one of MATH 235#0, MATH 226#0, or STAT 228#0. Prerequisite: MATH 218#3 or MATH 220#2, and MATH 228#1 or MATH 230#1 or MATH 281#1 or MATH 285#2 or MATH 290#2 or MATH 291#2 or ES\_APPM 252#1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 240-0 Linear Algebra (1 Unit)** Elementary linear algebra: systems of linear equations, matrix algebra, subspaces, determinants, eigenvalues, eigenvectors, and orthogonality. Students may not receive credit for both MATH 240-0 and any of MATH 281-3, MATH 285-1, MATH 290-1, MATH 291-1, GEN\_ENG 205-1, or GEN\_ENG 206-1. Prerequisite: MATH 230-1 or MATH 230-0 (former) or MATH 281-1 or ES\_APPM 252-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 250-0 Elementary Differential Equations (1 Unit)** Elementary ordinary differential equations: first-order equations, second-order linear equations, series solutions, and systems of first-order linear

equations. Students may not receive credit for both MATH 250-0 and any of MATH 281-3, MATH 360-1, GEN\_ENG 205-4, or GEN\_ENG 206-4. Prerequisites: MATH 226-0 or MATH 281-2; and MATH 228-2 or MATH 230-2 or MATH 234-0 (former) or MATH 281-2 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2; and MATH 240-0 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 281-1 Accelerated Mathematics for ISP: First Year (1 Unit)**

Multivariable differential and integral calculus. Students may not receive credit for both MATH 281-1 and any of MATH 228-1, MATH 230-0 (former), MATH 230-1, MATH 285-2, MATH 290-2, MATH 291-2, or ES\_APPM 252-1. Prerequisite: first-year standing in ISP. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 281-2 Accelerated Mathematics for ISP: First Year (1 Unit)** Vector calculus, ordinary differential equations, and infinite series. Students may not receive credit for both MATH 281-2 and any of MATH 226-0, MATH 228-2, MATH 230-2, MATH 234-0 (former), MATH 285-3, MATH 290-3, MATH 291-3, or ES\_APPM 252-2. Prerequisite: MATH 281-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 281-3 Accelerated Mathematics for ISP: First Year (1 Unit)** Linear algebra and systems of ordinary differential equations. Students may not receive credit for both MATH 281-3 and any of MATH 240-0, MATH 250-0, MATH 285-1, MATH 290-1, MATH 291-1, MATH 360-1, GEN\_ENG 205-1, GEN\_ENG 206-1, GEN\_ENG 205-4, or GEN\_ENG 206-4. Prerequisite: MATH 281-2. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 285-1 Accelerated Mathematics for MMSS (1 Unit)** Linear algebra: systems of linear equations, linear transformations, determinants, vector spaces, eigenvalues and eigenvectors. Students may not receive credit for both MATH 285-1 and any of MATH 240-0, MATH 281-3, MATH 290-1, MATH 291-1, GEN\_ENG 205-1, or GEN\_ENG 206-1. Prerequisite: MMSS students only. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 285-2 Accelerated Mathematics for MMSS (1 Unit)** Linear algebra: orthogonality, symmetric matrices, and quadratic forms. Multivariable differential calculus: vectors, differentiation, vector-valued functions, and optimization. Students may not receive credit for both MATH 285-2 and any of MATH 228-1, MATH 230-0 (former), MATH 230-1, MATH 281-1, MATH 290-2, MATH 291-2, or ES\_APPM 252-1. Prerequisite: MATH 285-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 285-3 Accelerated Mathematics for MMSS (1 Unit)** Multivariable integral calculus: multiple integration, line integrals, surface integrals, and vector analysis. Students may not receive credit for both MATH 285-3 and any of MATH 228-2, MATH 230-2, MATH 234-0 (former), MATH 281-2, MATH 290-3, MATH 291-3, or ES\_APPM 252-2. Prerequisite: MATH 285-2. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 290-1 MENU: Linear Algebra and Multivariable Calculus (1 Unit)** Linear algebra: systems of linear equations, linear transformations, determinants, eigenvalues and eigenvectors. Students may not receive credit for both MATH 290-1 and any of MATH 240-0, MATH 281-3, MATH 285-1, MATH 291-1, GEN\_ENG 205-1, or GEN\_ENG 206-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 290-2 MENU: Linear Algebra and Multivariable Calculus (1 Unit)** Linear algebra: orthogonality, symmetric matrices, and quadratic forms. Multivariable differential calculus: vectors, differentiation, vector-valued

functions, and optimization. Students may not receive credit for both MATH 290-2 and any of MATH 228-1, MATH 230-0 (former), MATH 230-1, MATH 281-1, MATH 285-2, MATH 291-2, or ES\_APPM 252-1. Prerequisite: MATH 290-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 290-3 MENU: Linear Algebra and Multivariable Calculus (1 Unit)**

Multivariable integral calculus: multiple integration, line integrals, surface integrals, and vector analysis. Students may not receive credit for both MATH 290-3 and any of MATH 228-2, MATH 230-2, MATH 234-0 (former), MATH 281-2, MATH 285-3, MATH 291-3, or ES\_APPM 252-2. Prerequisite: MATH 290-2. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 291-1 MENU: Intensive Linear Algebra and Multivariable Calculus (1 Unit)**

Foundations. Linear algebra: systems of linear equations, linear transformations, vector spaces, and subspaces. The course emphasizes theory and proofs. Students may not receive credit for both MATH 291-1 and any of MATH 240-0, MATH 281-3, MATH 285-1, MATH 290-1, GEN\_ENG 205-1, or GEN\_ENG 206-1. Prerequisite: consent of the department. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 291-2 MENU: Intensive Linear Algebra and Multivariable Calculus (1 Unit)**

Linear algebra: orthogonality, determinants, eigenvectors, and symmetric matrices. Multivariable differential calculus: vectors, differentiation, and vector-valued functions. The course emphasizes theory and proofs. Students may not receive credit for both MATH 291-2 and any of MATH 228-1, MATH 230-0 (former), MATH 230-1, MATH 281-1, MATH 285-2, MATH 290-2, or ES\_APPM 252-1. Prerequisite: MATH 291-1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 291-3 MENU: Intensive Linear Algebra and Multivariable Calculus (1 Unit)**

Multivariable differential calculus: optimization. Multivariable integral calculus: multiple integration, line integrals, surface integrals, and vector analysis. The course emphasizes theory and proofs. Students may not receive credit for both MATH 291-3 and any of MATH 228-2, MATH 230-2, MATH 234-0 (former), MATH 281-2, MATH 285-3, MATH 290-3, or ES\_APPM 252-2. Prerequisite: MATH 291-2. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**MATH 300-0 Foundations of Higher Mathematics (1 Unit)**

Introduction to fundamental mathematical structures, including sets, functions, equivalence relations, and cardinal numbers. Elementary logic and proof techniques. Students may not receive credit for MATH 300-0 after passing any of MATH 320-1, MATH 321-1, MATH 330-1, or MATH 331-1.

Prerequisite: MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1 or consent of the department.

*Formal Studies Distro Area*

**MATH 300-BR Foundations of Higher Mathematics (1 Unit)**

For participants in the Causeway Postbaccalaureate Program only. Introduction to fundamental mathematical structures, including sets, functions, equivalence relations, and cardinal numbers. Elementary logic and proof techniques. Additional topics selected by the instructor.

**MATH 306-0 Combinatorics & Discrete Mathematics (1 Unit)**

Discrete mathematics, inductive reasoning, counting problems, binomial coefficients and Pascal's triangle, Fibonacci numbers, set and integer partitions, and generating functions.

Prerequisite: MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1.

*Formal Studies Distro Area*

**MATH 308-0 Graph Theory (1 Unit)**

Introduction to graph theory: graphs, trees, matchings, planar graphs, and colorings. Additional topics as time permits.

Prerequisite: MATH 291-1 or MATH 300-0 or MATH 306-0.

*Formal Studies Distro Area*

**MATH 310-1 Probability and Stochastic Processes (1 Unit)**

Axioms of probability. Conditional probability and independence. Random variables. Joint distributions. Expectation. Limit theorems: the weak law of large numbers and the central limit theorem. Students may not receive credit for both MATH 310-1 and any of MATH 311-1, MATH 314-0, MATH 385-0, STAT 320-1, STAT 383-0, IEMS 202-0, or ELEC\_ENG 302-0.

Prerequisite or corequisite: MATH 226-0 or MATH 281-2; and MATH 228-2 or MATH 230-2 or MATH 234-0 (former), or MATH 281-2 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2.

*Formal Studies Distro Area*

**MATH 310-2 Probability and Stochastic Processes (1 Unit)**

Discrete-time Markov chains, recurrence and transience. Students may not receive credit for both MATH 310-2 and MATH 311-2.

Prerequisites: MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1; and MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or STAT 320-1 or STAT 383-0 or IEMS 202-0 or ELEC\_ENG 302-0.

*Formal Studies Distro Area*

**MATH 310-3 Probability and Stochastic Processes (1 Unit)**

Continuous-time Markov chains, queues, population growth models.

Brownian motion and other diffusion processes. Additional topics as time permits. Students may not receive credit for both MATH 310-3 and MATH 311-3.

Prerequisite: MATH 310-2 or MATH 311-2.

*Formal Studies Distro Area*

**MATH 311-1 MENU: Probability and Stochastic Processes (1 Unit)**

Probability spaces. Random variables. Independence. Distributions. Generating functions. The central limit theorem. Students may not receive credit for both MATH 311-1 and any of MATH 310-1, MATH 314-0, MATH 385-0, STAT 320-1, STAT 383-0, IEMS 202-0, or ELEC\_ENG 302-0. Prerequisite: MATH 226-0 or MATH 281-2; and MATH 291-3, or MATH 300-0 and any one of MATH 290-3, MATH 281-2, MATH 285-3 or ES\_APPM 252-2; or consent of the department. Recommended: MATH 320-1 or MATH 321-1.

*Formal Studies Distro Area*

**MATH 311-2 MENU: Probability and Stochastic Processes (1 Unit)**

Markov chains, convergence of random variables, random processes, renewals, and queues. Students may not receive credit for both MATH 311-2 and MATH 310-2.

Prerequisite: MATH 311-1 or consent of the department.

*Formal Studies Distro Area*

**MATH 311-3 MENU: Probability and Stochastic Processes (1 Unit)**

Stationary processes, martingales, and diffusion processes. Students may not receive credit for both MATH 311-3 and MATH 310-3.

Prerequisite: MATH 311-2 or consent of the department.

*Formal Studies Distro Area*

**MATH 314-0 Probability and Statistics for Econometrics (1 Unit)**

Introduction to probability theory and statistical methods, including properties of probability distributions, sampling distributions, estimation, confidence intervals and hypothesis testing. For students planning to take ECON 381-1. Students may not receive credit for both MATH 314-0 and any of MATH 310-1, MATH 311-1, MATH 385-0, STAT 320-1, STAT 383-0, IEMS 202-0, or ELEC\_ENG 302-0. Prerequisite or corequisite:

MATH 226-0 or MATH 281-2; and MATH 228-2 or MATH 230-2 or MATH 234-0 (former) or MATH 281-1 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2.

*Formal Studies Distro Area*

**MATH 320-1 Real Analysis (1 Unit)**

Analysis on the real line: axiomatic development of the real number system, sequences and series of real numbers, continuity, and differentiability. Students may not receive credit for both MATH 320-1 and MATH 321-1.

Prerequisite: MATH 226-0 or MATH 281-2; and MATH 300-0 or MATH 291-3; or consent of the department.

*Formal Studies Distro Area*

**MATH 320-2 Real Analysis (1 Unit)**

Analysis on the real line: the Riemann integral and sequences and series of functions. Additional topics as time permits. Students may not receive credit for both MATH 320-2 and MATH 321-2.

Prerequisite: MATH 320-1 or MATH 321-1.

*Formal Studies Distro Area*

**MATH 320-3 Real Analysis (1 Unit)**

Analysis on Euclidean spaces: the topology of Euclidean spaces, limits, continuity, and differentiability, including the inverse and implicit function theorems. Additional topics as time permits. Students may not receive credit for both MATH 320-3 and MATH 321-2.

Prerequisite: MATH 320-2.

*Formal Studies Distro Area*

**MATH 321-1 MENU: Real Analysis (1 Unit)**

Analysis on metric spaces: the real number system, the topology of metric spaces, sequences and series, continuity, and differentiability. Students may not receive credit for both MATH 321-1 and MATH 320-1.

Prerequisite: consent of the department.

*Formal Studies Distro Area*

**MATH 321-2 MENU: Real Analysis (1 Unit)**

Analysis on metric spaces: the Riemann integral, sequences and series of functions, and functions of several variables, including the inverse and implicit function theorems. Students may not receive credit for both MATH 321-2 and either MATH 320-2 or MATH 320-3.

Prerequisite: MATH 321-1.

*Formal Studies Distro Area*

**MATH 321-3 MENU: Real Analysis (1 Unit)**

Lebesgue measure and the Lebesgue integral. Additional topics as time permits.

Prerequisite: MATH 321-2.

*Formal Studies Distro Area*

**MATH 325-0 Complex Analysis (1 Unit)**

Complex numbers. Analytic functions. Cauchy's theorem and the Cauchy integral formula. Series. Residues. Students may not receive credit for both MATH 325-0 and either MATH 382-0 or ES\_APPM 312-0.

Prerequisites: MATH 226-0 or MATH 281-2; and MATH 228-2 or MATH 230-2 or MATH 234-0 (former) or MATH 281-2 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2; and MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1.

*Formal Studies Distro Area*

**MATH 327-0 Mechanics for Mathematicians (1 Unit)**

Fundamental mathematical ideas arising in classical mechanics: Newtonian mechanics, Lagrangian formalism and the calculus of variations, motion with constraints, symmetries and conservation laws, Hamiltonian mechanics, and Liouville's theorem. No prior knowledge of

physics required. Students may not receive credit for MATH 327-0 after taking PHYSICS 330-1.

**Prerequisites:** MATH 226-0 or MATH 281-3; and MATH 228-2 or MATH 230-2 or MATH 234-0 (former) or MATH 281-2 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2; and MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1.

*Formal Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*  
*Natural Sciences Distro Area*

#### **MATH 330-1 Abstract Algebra (1 Unit)**

Group theory. Students may not receive credit for both MATH 330-1 and MATH 331-1.

**Prerequisite:** MATH 291-1 or MATH 300-0.

*Formal Studies Distro Area*

#### **MATH 330-2 Abstract Algebra (1 Unit)**

Ring theory, including polynomial rings. Students may not receive credit for both MATH 330-2 and MATH 331-2.

**Prerequisite:** MATH 330-1 or MATH 331-1.

*Formal Studies Distro Area*

#### **MATH 330-3 Abstract Algebra (1 Unit)**

Field theory and Galois theory. Students may not receive credit for both MATH 330-3 and MATH 331-3.

**Prerequisite:** MATH 330-2 or MATH 331-2.

*Formal Studies Distro Area*

#### **MATH 331-1 MENU: Abstract Algebra (1 Unit)**

Group theory, including the Sylow theorems. Students may not receive credit for both MATH 331-1 and MATH 330-1.

**Prerequisite:** consent of the department.

*Formal Studies Distro Area*

#### **MATH 331-2 MENU: Abstract Algebra (1 Unit)**

Ring theory, including polynomial rings. Module theory, including canonical forms of operators on vector spaces. Students may not receive credit for both MATH 331-2 and MATH 330-2.

**Prerequisite:** MATH 331-1.

*Formal Studies Distro Area*

#### **MATH 331-3 MENU: Abstract Algebra (1 Unit)**

Field theory and Galois theory. Students may not receive credit for both MATH 331-3 and MATH 330-3.

**Prerequisite:** MATH 331-2.

*Formal Studies Distro Area*

#### **MATH 334-0 Linear Algebra: Second Course (1 Unit)**

Vector spaces. Linear maps. Eigenvalues, eigenvectors and invariant subspaces. Inner product spaces. Canonical forms of operators on real and complex vector spaces.

**Prerequisite:** MATH 300-0 or MATH 291-2.

*Formal Studies Distro Area*

#### **MATH 336-1 Introduction to the Theory of Numbers (1 Unit)**

Divisibility and prime numbers. Congruences. Quadratic reciprocity. Diophantine equations.

**Prerequisite:** MATH 228-1 or MATH 230-1 or MATH 281-1 or MATH 285-2 or MATH 290-2 or MATH 291-2 or ES\_APPM 252-1.

*Formal Studies Distro Area*

#### **MATH 336-2 Introduction to the Theory of Numbers (1 Unit)**

Topics in analytic and algebraic number theory.

**Prerequisite:** MATH 336-1.

*Formal Studies Distro Area*

#### **MATH 340-0 Geometry (1 Unit)**

Axioms for Euclidean geometry. Non-Euclidean geometry. Projective geometry. Introduction of coordinate systems from the axioms. Quadrics. Erlangen program. Introduction to plane algebraic curves.

**Prerequisite:** MATH 300-0 or MATH 291-1.

*Formal Studies Distro Area*

#### **MATH 342-0 Introduction to Differential Geometry (1 Unit)**

Differential geometry of curves and surfaces in three-dimensional space: curves, regular surfaces, the Gauss map, and additional topics as time permits.

**Prerequisites:** MATH 226-0 or MATH 281-2; and MATH 228-2 or MATH 230-2 or MATH 234-0 (former) or MATH 281-2 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2; and MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1.

*Formal Studies Distro Area*

#### **MATH 344-1 Introduction to Topology (1 Unit)**

Topological spaces, continuity, connectedness, compactness, countability and separation axioms.

**Prerequisite:** MATH 320-1 or MATH 321-1.

*Formal Studies Distro Area*

#### **MATH 344-2 Introduction to Topology (1 Unit)**

The fundamental group. Classification of covering spaces. Additional topics as permits.

**Prerequisites:** MATH 344-1, and either MATH 330-1 or MATH 331-1.

*Formal Studies Distro Area*

#### **MATH 351-0 Fourier Analysis and Boundary Value Problems (1 Unit)**

Fourier series with applications to partial differential equations arising in physics and engineering. Students may not receive credit for both MATH 351-0 and any of MATH 381-0, MATH 360-2, or ES\_APPM 311-2.

**Prerequisite:** MATH 250-0 or MATH 281-3 or MATH 360-1 or GEN\_ENG 206-4 or GEN\_ENG 206-4.

*Formal Studies Distro Area*

#### **MATH 353-0 Qualitative Theory of Differential Equations (1 Unit)**

Qualitative theory of ordinary differential equations: linear systems, phase portraits, periodic solutions, stability theory, Lyapunov functions, and chaos. Students may not receive credit for both MATH 353-0 and MATH 360-2.

**Prerequisite:** MATH 250-0 or MATH 281-3 or MATH 360-1 or GEN\_ENG 205-4 or GEN\_ENG 206-4.

*Formal Studies Distro Area*

#### **MATH 354-0 Chaotic Dynamical Systems (1 Unit)**

Chaotic phenomena in deterministic discrete dynamical systems, primarily through iteration of functions of one variable. Prerequisite: MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1. *Formal Studies Distro Area*

#### **MATH 360-1 MENU: Applied Analysis (1 Unit)**

Linear ordinary differential equations, systems of linear ordinary differential equations, and applications. Students may not receive credit for both MATH 360-1 and any of MATH 250-0, MATH 281-3, GEN\_ENG 205-4, GEN\_ENG 206-4.

**Prerequisite:** MATH 226-0 or MATH 281-2; and MATH 290-3 or MATH 291-3.

*Formal Studies Distro Area*

#### **MATH 360-2 MENU: Applied Analysis (1 Unit)**

Qualitative analysis of systems of ordinary differential equations. Linear partial differential equations. Fourier series and orthogonal functions. Applications. Students may not receive credit for both MATH 360-2 and any of MATH 381-0, MATH 351-0, or ES\_APPM 311-2.

**Prerequisite:** MATH 360-1.

**Formal Studies Distro Area**

**MATH 365-0 Computational Methods in Mathematics (1 Unit)** An introduction to computational methods in mathematics. Students will apply computational techniques to analyze and interpret a variety of mathematical phenomena. Prerequisites: MATH 230-2 or MATH 228-2 and MATH 240-0, or MATH 290-3, or MATH 291-3.

**MATH 366-0 Mathematical Models in Finance (1 Unit)** Cash flow computations. Basic financial concepts (stocks, bonds, options, arbitrage, hedging) and put-call parity. Binomial tree models. Risk-neutral valuation. Random walk and Brownian motion as a tool for modeling fluctuations. Options pricing. Applications of the central limit theorem. The Black-Scholes formula and partial differential equation. Numerical approximations. Some familiarity with differential equations is desirable. Prerequisites: MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1; and MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or STAT 320-1 or STAT 383-0 or IEMS 202-0 or ELEC\_ENG 302-0. *Formal Studies Distro Area*

**MATH 368-0 Introduction to Optimization (1 Unit)**

Methods and concepts of optimization theory: linear programming, duality, convexity, and Kuhn-Tucker theory. Prerequisites: MATH 226-0 or MATH 281-2; and MATH 291-3, or MATH 300-0 and one of MATH 228-2, MATH 230-2, MATH 234-0 (former), MATH 281-2, MATH 285-3, MATH 290-3, or ES\_APPM 252-2.

*Formal Studies Distro Area***MATH 370-0 Mathematical Logic (1 Unit)**

Mathematical formulation and rigorous discussion of logical systems, particularly the propositional calculus and the functional calculi of first and second order. Well-formed formulae, formal languages, proofs, tautologies, effective procedures, deduction theorems, axiom schemata. Prerequisite: MATH 300-0 or MATH 291-3 or consent of the instructor. *Formal Studies Distro Area*

**MATH 381-0 Fourier Analysis and Boundary Value Problems for ISP (1 Unit)** Fourier series. Hilbert spaces and orthogonal functions. Parseval's theorem. Poisson summation formula and lattice points. Fourier integrals: Gaussian functions. Fourier inversion formula. Convolution. Sturm-Liouville theory. Applications to partial differential equations. Heat and wave equations. For ISP students only. Students may not receive credit for both MATH 381-0 and any of MATH 351-0, MATH 360-2, or ES\_APPM 311-2. Prerequisites: MATH 281-3 and PHYSICS 125-3. *Formal Studies Distro Area*

**MATH 382-0 Complex Analysis for ISP (1 Unit)** Complex numbers. Analytic functions. Cauchy's theorem and the Cauchy integral formula. Series. Residues. For ISP students only. Students may not receive credit for both MATH 382-0 and either MATH 325-0 or ES\_APPM 312-0. Prerequisites: MATH 281-3 and PHYSICS 125-3. *Formal Studies Distro Area*

**MATH 385-0 Probability and Statistics for MMSS (1 Unit)** Probability theory and its applications in the social sciences. Students may not receive credit for both MATH 385-0 and any of MATH 310-1, MATH 311-1, MATH 314-0, STAT 320-1, STAT 383-0, IEMS 202-0, or ELEC\_ENG 302-0. Prerequisite: second-year standing in MMSS. *Formal Studies Distro Area*

**MATH 386-1 Econometrics for MMSS (1 Unit)** Econometric methods. Students may not receive credit for both MATH 386-1 and ECON 381-1. Prerequisite: MATH 385-0. *Formal Studies Distro Area*

**MATH 386-2 Econometrics for MMSS (1 Unit)** Econometric methods. Students may not receive credit for both MATH 386-2 and ECON 381-2. Prerequisite: MATH 386-1. *Formal Studies Distro Area*

**MATH 395-0 Undergraduate Seminar (1 Unit)** Topics in modern mathematics and relationships among different branches of mathematics. May be taken for only 1 unit of credit at a time but may be repeated for credit with change of topic. Prerequisite: consent of the department. *Advanced Expression*

**MATH 399-0 Independent Study (1 Unit)** Independent learning under the direction of a faculty adviser. Students must obtain departmental approval for a plan of study before enrolling in MATH 399-0. Prerequisite: consent of the department.

## Mathematics Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Mathematics major requirements

The mathematics major has three components: a Basic Course requirement, a Computing requirement, and a Mathematics Concentration.

- Basic (prerequisite) course requirement. Basic courses may count toward the requirements of more than one major, minor, or program. Units vary depending on placement testing and sequence chosen.
- Computing requirement. 1 course which uses computing as a tool, chosen from list of approved courses. Students may satisfy this with a 300-level mathematics course inside their chosen concentration, or an additional course not applied to a concentration.
- Mathematics concentration. Students choose one of two options. Both consist of upper-level courses (300-level or above).
  - General Mathematics (p. 370) (9 units). Provides a general and broadly applicable course of study.<sup>1</sup>
  - Pure Mathematics (p. 370) (10 units). Provides a deeply conceptual and rigorous course of study.<sup>2</sup>

<sup>1</sup> With prior approval from the Director of Undergraduate Studies (<https://www.math.northwestern.edu/undergraduate/advising/>), the General Mathematics concentration may include as many as 3 courses offered by other departments with substantial mathematical content or that focus on serious applications of mathematics. No such course may count simultaneously toward the requirements of another major, minor, or program.

<sup>2</sup> Students interested in pursuing honors in mathematics should consider the Pure Mathematics concentration.

## Basic Courses

Course	Title
MATH 220-1 & MATH 220-2	Single-Variable Differential Calculus and Single-Variable Integral Calculus
or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 226-0	Sequences and Series

MATH 230-1 & MATH 230-2 & MATH 240-0  or MATH 228-1 & MATH 228-2 & GEN_ENG 205-1  or ES_APPM 252-1 & ES_APPM 252-2 & GEN_ENG 206-1  or MATH 281-1 & MATH 281-2 & MATH 281-3  or MATH 285-1 & MATH 285-2 & MATH 285-3  or MATH 290-1 & MATH 290-2 & MATH 290-3  or MATH 291-1 & MATH 291-2 & MATH 291-3	Multivariable Differential Calculus and Multivariable Integral Calculus and Linear Algebra  Multivariable Differential Calculus for Engineering and Multivariable Integral Calculus for Engineering and Engineering Analysis I  Honors Calculus for Engineers and Honors Calculus for Engineers and Honor Engineering Analysis  Accelerated Mathematics for ISP. First Year and Accelerated Mathematics for ISP. First Year and Accelerated Mathematics for ISP. First Year  Accelerated Mathematics for MMSS and Accelerated Mathematics for MMSS and Accelerated Mathematics for MMSS  MENU: Linear Algebra and Multivariable Calculus and MENU: Linear Algebra and Multivariable Calculus  and MENU: Linear Algebra and Multivariable Calculus MENU: Intensive Linear Algebra and Multivariable Calculus and MENU: Intensive Linear Algebra and Multivariable Calculus and MENU: Intensive Linear Algebra and Multivariable Calculus
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MATH 331-1 & MATH 331-2 & MATH 331-3	MENU: Abstract Algebra and MENU: Abstract Algebra and MENU: Abstract Algebra
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- The 9 upper-level courses must include at least 1 Real Analysis course:

Course	Title
MATH 320-1 or MATH 321-1	Real Analysis MENU: Real Analysis

- The 9 upper-level courses must include at least 1 Algebra course:

Course	Title
MATH 330-1 or MATH 331-1	Abstract Algebra MENU: Abstract Algebra
or MATH 334-0	Linear Algebra: Second Course

## Pure Mathematics Concentration (10 units)

- The 10 upper-level courses must include 1 of the following three-course sequences in Real Analysis:

Course	Title
MATH 320-1 & MATH 320-2 & MATH 320-3	Real Analysis and Real Analysis and Real Analysis
or MATH 321-1 & MATH 321-2 & MATH 321-3	MENU: Real Analysis and MENU: Real Analysis and MENU: Real Analysis

- The 10 upper-level courses must include 1 of the following three-course sequences in Abstract Algebra:

Course	Title
MATH 330-1 & MATH 330-2 & MATH 330-3	Abstract Algebra and Abstract Algebra and Abstract Algebra
or MATH 331-1 & MATH 331-2 & MATH 331-3	MENU: Abstract Algebra and MENU: Abstract Algebra and MENU: Abstract Algebra

- The 10 upper-level courses must include 1 quarter of MATH 395-0. This requirement may be waived for students who complete a project culminating in a senior thesis of appropriate quality. Consult with the Director of Undergraduate Studies (<https://www.math.northwestern.edu/undergraduate/advising/>) to learn more.
- The remaining 3 upper-level mathematics course may not include MATH 399-0 or additional quarters of MATH 395-0. A 300-level mathematics course used towards the computing requirement can count towards these 3.

## Honors in Mathematics

The Department of Mathematics (<https://www.math.northwestern.edu>) nominates outstanding mathematics majors to graduate with honors in the major. Mathematics majors interested in pursuing honors should consult with the Director of Undergraduate Studies (<https://www.math.northwestern.edu/undergraduate/advising/>) before the end of their junior year. To be eligible for nomination a student must:

- complete 1 of the following course sequences:

Course	Title
MATH 320-1 & MATH 320-2 & MATH 320-3	Real Analysis and Real Analysis and Real Analysis

or MATH 321-1	MENU: Real Analysis
& MATH 321-2	and MENU: Real Analysis
& MATH 321-3	and MENU: Real Analysis

- complete 1 of the following course sequences:

Course	Title
MATH 330-1	Abstract Algebra
& MATH 330-2	and Abstract Algebra
& MATH 330-3	and Abstract Algebra
or MATH 331-1	MENU: Abstract Algebra
& MATH 331-2	and MENU: Abstract Algebra
& MATH 331-3	and MENU: Abstract Algebra

- have a grade point average greater than or equal to 3.5 in courses which satisfy major requirements (not including Basic courses),
- complete 2 quarters of MATH 399-0 with distinction, or 2 quarters of a 400 level mathematics sequence with distinction, and
- complete a project culminating in a senior thesis of appropriate quality.

For more information contact the Director of Undergraduate Studies (<https://www.math.northwestern.edu/undergraduate/advising/>), and see Honors in the Major under Academic Options and Support (p. 222).

## Graduate Study in Mathematics

Students intending to pursue graduate study in mathematics should consider graduating with honors in mathematics. The following courses and course sequences are essential for graduate study in mathematics:

Course	Title
MATH 321-1	MENU: Real Analysis
& MATH 321-2	and MENU: Real Analysis
& MATH 321-3	and MENU: Real Analysis
or MATH 320-1	Real Analysis
& MATH 320-2	and Real Analysis
& MATH 320-3	and Real Analysis
MATH 331-1	MENU: Abstract Algebra
& MATH 331-2	and MENU: Abstract Algebra
& MATH 331-3	and MENU: Abstract Algebra
or MATH 330-1	Abstract Algebra
& MATH 330-2	and Abstract Algebra
& MATH 330-3	and Abstract Algebra
MATH 344-1	Introduction to Topology
& MATH 344-2	and Introduction to Topology
MATH 334-0	Linear Algebra: Second Course
MATH 325-0	Complex Analysis

Well-prepared students pursuing graduate study in mathematics should also consider taking the following graduate course sequences:

Course	Title
MATH 410-1	Analysis
& MATH 410-2	and Analysis
& MATH 410-3	and Introduction to Modern Analysis
MATH 470-1	Algebra
& MATH 470-2	and Algebra
& MATH 470-3	and Algebra

## Secondary Teaching Licensure in Mathematics

To obtain an Illinois Professional Educator license in mathematics, a Weinberg student majoring in mathematics must apply to the Secondary Teaching (p. 130) program in the School of Education and Social Policy (SESP) (p. 109) by the fall of the junior year and complete the

requirements of that program as well as the degree requirements of Weinberg College.

## Mathematics Minor

### Minor requirements

(Units depend on basic courses.)

The mathematics minor consists of basic courses and 6 upper-level courses.

### Basic Courses

Students may count basic courses toward the requirements of more than one major, minor, or program.

Course	Title
MATH 220-1	Single-Variable Differential Calculus
& MATH 220-2	and Single-Variable Integral Calculus
or MATH 218-1	Single-Variable Calculus with Precalculus
& MATH 218-2	and Single-Variable Calculus with Precalculus
& MATH 218-3	and Single-Variable Calculus with Precalculus
MATH 226-0	Sequences and Series
MATH 230-1	Multivariable Differential Calculus
& MATH 230-2	and Multivariable Integral Calculus
& MATH 240-0	and Linear Algebra
or MATH 228-1	Multivariable Differential Calculus for Engineering
& MATH 228-2	and Multivariable Integral Calculus for Engineering
& GEN_ENG 205-1	and Engineering Analysis I
or ES_APPM 252-1	Honors Calculus for Engineers
& ES_APPM 252-2	and Honors Calculus for Engineers
& GEN_ENG 206-1	and Honor Engineering Analysis
or MATH 281-1	Accelerated Mathematics for ISP. First Year
& MATH 281-2	and Accelerated Mathematics for ISP. First Year
& MATH 281-3	and Accelerated Mathematics for ISP. First Year
or MATH 285-1	Accelerated Mathematics for MMSS
& MATH 285-2	and Accelerated Mathematics for MMSS
& MATH 285-3	and Accelerated Mathematics for MMSS
or MATH 290-1	and MENU: Linear Algebra and Multivariable Calculus
& MATH 290-2	and MENU: Linear Algebra and Multivariable Calculus
& MATH 290-3	and MENU: Linear Algebra and Multivariable Calculus
or MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus
& MATH 291-2	and MENU: Intensive Linear Algebra and Multivariable Calculus
& MATH 291-3	and MENU: Intensive Linear Algebra and Multivariable Calculus

### Upper-level Courses

Students must complete 6 upper-level mathematics courses. Upper-level courses are courses at the 300 level or above.

**The 6 upper-level courses must include at least 1 of the following two-course sequences:**

Course	Title
MATH 310-1	Probability and Stochastic Processes
& MATH 310-2	and Probability and Stochastic Processes
MATH 311-1	MENU: Probability and Stochastic Processes
& MATH 311-2	and MENU: Probability and Stochastic Processes
MATH 320-1	Real Analysis
& MATH 320-2	and Real Analysis

MATH 321-1 & MATH 321-2	MENU: Real Analysis and MENU: Real Analysis
MATH 330-1 & MATH 330-2	Abstract Algebra and Abstract Algebra
MATH 331-1 & MATH 331-2	MENU: Abstract Algebra and MENU: Abstract Algebra
MATH 344-1 & MATH 344-2	Introduction to Topology and Introduction to Topology

With prior approval from the Director of Undergraduate Studies (<https://www.math.northwestern.edu/undergraduate/advising/>), the upper-level courses may include as many as 2 courses offered by other departments with substantial mathematical content or that focus on serious applications of mathematics. No such course may count simultaneously toward the requirements of another major or minor.

## Mathematics Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Students who have completed all of the requirements for the Integrated Science Program (ISP) (p. 345) major will satisfy the requirements for an additional major in mathematics by completing 1 of the following course sequences:

Course	Title
MATH 320-1 & MATH 320-2	Real Analysis and Real Analysis
& MATH 320-3	and Real Analysis
or MATH 321-1 & MATH 321-2 & MATH 321-3	MENU: Real Analysis and MENU: Real Analysis and MENU: Real Analysis
or MATH 330-1 & MATH 330-2 & MATH 330-3	Abstract Algebra and Abstract Algebra and Abstract Algebra
or MATH 331-1 & MATH 331-2 & MATH 331-3	MENU: Abstract Algebra and MENU: Abstract Algebra and MENU: Abstract Algebra

Students may not substitute INTG\_SCI 398-0 for any mathematics course in the ISP curriculum.

See the Mathematics Major (p. 369) for further information regarding Honors in Mathematics, Graduate Study in Mathematics, and Secondary Teaching Licensure in Mathematics.

## Mathematics Second Major or Minor for MMSS Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Second Major in Mathematics for MMSS Majors

A student who has completed all of the requirements for an adjunct major in Mathematical Methods in the Social Sciences (MMSS) (p. 360) but *not* a major in a social science must satisfy the ordinary requirements for the mathematics major (p. 369) to earn an additional major in mathematics. Students may not count any 300 level mathematics course toward both the MMSS adjunct major and the mathematics major.

## Third Major in Mathematics for MMSS Majors

A student who has completed all of the requirements for an adjunct major in Mathematical Methods in the Social Sciences (MMSS) (p. 360) *and* a major in a social science will satisfy the requirements for an additional major in mathematics by

- completing
 

Course	Title
MATH 226-0	Sequences and Series
- completing 1 of the following course sequences:
 

Course	Title
MATH 320-1 & MATH 320-2 & MATH 320-3 or MATH 321-1 & MATH 321-2 & MATH 321-3	Real Analysis and Real Analysis and Real Analysis MENU: Real Analysis and MENU: Real Analysis and MENU: Real Analysis
- and completing 3 of the following courses:
 

Course	Title
MATH 300-0 or MATH 310-2 or MATH 310-3 or MATH 311-2 or MATH 311-3 or MATH 325-0 or MATH 330-1 or MATH 330-2 or MATH 330-3 or MATH 331-1 or MATH 331-2 or MATH 331-3 or MATH 334-0 or MATH 344-1 or MATH 344-2 or MATH 360-1 or MATH 360-2 or MATH 366-0 or MATH 368-0	Foundations of Higher Mathematics Probability and Stochastic Processes Probability and Stochastic Processes MENU: Probability and Stochastic Processes MENU: Probability and Stochastic Processes Complex Analysis Abstract Algebra Abstract Algebra Abstract Algebra MENU: Abstract Algebra MENU: Abstract Algebra MENU: Abstract Algebra Linear Algebra: Second Course Introduction to Topology Introduction to Topology MENU: Applied Analysis MENU: Applied Analysis Mathematical Models in Finance Introduction to Optimization

Students may not count any 300 level mathematics course toward both the MMSS adjunct major and the mathematics major.

See the Mathematics Major (p. 369) for further information regarding Honors in Mathematics, Graduate Study in Mathematics, and Secondary Teaching Licensure in Mathematics.

## Minor in Mathematics for MMSS Majors

A student who has completed all of the requirements for an adjunct major in Mathematical Methods in the Social Sciences (MMSS) (p. 360) will satisfy the requirements for a mathematics minor by

- completing
 

Course	Title
MATH 226-0	Sequences and Series
- and completing 1 of the following course sequences:
 

Course	Title
MATH 320-1	Real Analysis
& MATH 320-2	and Real Analysis
& MATH 320-3	and Real Analysis
or MATH 321-1	MENU: Real Analysis
& MATH 321-2	and MENU: Real Analysis
& MATH 321-3	and MENU: Real Analysis

Students may not count any 300 level mathematics course toward both the MMSS adjunct major and the mathematics minor.

## Middle East and North African Languages

[mena-languages.northwestern.edu](http://mena-languages.northwestern.edu) (<https://mena-languages.northwestern.edu/>)

The MENA Languages Program offers an array of interesting language and culture courses in Arabic, Hebrew, Turkish, and Persian, in addition to tutoring services for enrolled students and regular cultural programming such as language tables, movie nights, and guest speakers. Students in the MENA languages program acquire important language skills and a fresh perspectives on the cultures and people of the MENA region (stretching from Morocco to Iran) which is very diverse region with more than sixty languages being spoken throughout.

The MENA Languages Program aims to develop proficient and confident speakers, who, through exposure to a new language and its rich culture, will be able to extend the limits of how they see, understand, talk about, and interact with the world. The program pursues the following objectives which fully align with the proposed Weinberg Learning Strategies (observe, critique, reflect, and express):

- Provide expert language instruction to ensure that **communication** in the foreign language is effective in a variety of academic, career-related, or personal situations, and for multiple purposes.
- Provide opportunities to enrich students' knowledge of the target **culture** by encouraging them to investigate, explain, and reflect on practices and perspectives.
- Encourage students to make **comparisons** between the target culture and their own so that they can identify and understand similarities and differences.
- Provide cultural events for students to make **connections** between the different cultures, and to learn to comprehend and accept diverse perspectives.
- Encourage students to venture outside the classroom (for example, through study abroad) to apply and practice their linguistic and

cultural skills by interacting and collaborating with and within communities of different ethnicities and cultures.

## Study Abroad

The faculty in the MENA Languages Program works carefully with students to integrate a period of study abroad into their overall academic plans. By living in the new culture and interacting with native speakers of Arabic, Hebrew, Turkish, or Persian, students typically return with a much firmer grasp of both written and spoken language as well as a more balanced international perspective. Students who have special interests and needs are welcome to investigate programs and discuss opportunities with the faculty.

## Program of Study

- Arabic Minor (p. 375)

## Courses in Arabic, Hebrew, Persian, and Turkish are listed alphabetically, below.

**ARABIC 111-1 Arabic I (1 Unit)** Three-course introduction to listening, speaking, reading, and writing Arabic. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: None or placement exam results.

**ARABIC 111-2 Arabic I (1 Unit)** Three-course introduction to listening, speaking, reading, and writing Arabic. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: ARABIC 111-1 or equivalent.

**ARABIC 111-3 Arabic I (1 Unit)** Three-course introduction to listening, speaking, reading, and writing Arabic. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: None or placement exam results. Prerequisite: ARABIC 111-2 or equivalent.

### ARABIC 114-0 Conversation and Culture in the Arab World (1 Unit)

This course focuses one of the main dialects of Arabic (Egyptian, Levantine, Moroccan). This course is strongly recommended for students, undergraduate or graduate, who wish to further explore a spoken variety of Arabic. The course uses a communicative, proficiency-oriented approach with fully integrated audiovisual media to help students acquire a solid background on how to communicate using a dialect. Prerequisite: 121-2.

**ARABIC 121-1 Arabic II (1 Unit)** Further development of grammar knowledge, reading, writing, speaking, and listening skills. Completion of at least this level is recommended for students seeking functional proficiency for study abroad. Prerequisite: ARABIC 111-3 or equivalent.

**ARABIC 121-2 Arabic II (1 Unit)** Further development of grammar knowledge, reading, writing, speaking, and listening skills as well as cultural knowledge. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: ARABIC 121-1 or equivalent.

**ARABIC 121-3 Arabic II (1 Unit)** Further development of grammar knowledge, reading, writing, speaking, and listening skills as well as cultural knowledge. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: ARABIC 121-2 or equivalent.

**ARABIC 125-0 Media Arabic (1 Unit)** Introduction to vocabulary, expressions, and terminology used in Arab print and broadcast media. Prerequisite: ARABIC 121-2 or equivalent.

**ARABIC 211-1 Arabic III (1 Unit)** Continued skills development of grammar knowledge, reading, writing, speaking, and listening skills as well as cultural knowledge. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: ARABIC 121-3 or equivalent.

**ARABIC 211-2 Arabic III (1 Unit)** Continued skills development of grammar knowledge, reading, writing, speaking, and listening skills as well as cultural knowledge. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: ARABIC 211-1 or equivalent.

**ARABIC 211-3 Arabic III (1 Unit)** Continued skills development of grammar knowledge, reading, writing, speaking, and listening skills as well as cultural knowledge. The course follows the integrated approach which blends the standard Arabic, Fu##ā (reading and writing) and the dialect/colloquial language, āmmiyya (speaking and listening) in a way that reflects the authentic practice of native Arabic speakers. Prerequisite: ARABIC 211-2 or equivalent.

**ARABIC 216-0 Language and Culture (1 Unit)** In this course students will study important cultural themes in Arab society. In-depth exploration of a variety of historical and cultural topics from various sources help students build a comprehensive vocabulary as well as expand their reading knowledge and cultural understanding. The course will engage both, the MSA "frame" of narration as well as the spoken Arabic dialogue. Prerequisite: ARABIC 121-3 or permission of the instructor.

**ARABIC 245-0 Current Events in the Middle East: Arab Society through Online News Media (1 Unit)** This course focuses on current events in the Middle East through in-depth exploration of online News Media sources such as foreign newspaper articles and videos. Students will gain respect for alternative ideas and diversity of views as expressed in Arab news. The course focuses on reading, listening, discussion as well as building a comprehensive vocabulary in MSA and dialect. Prerequisite: ARABIC 121-3 and ARABIC 125-0 or permission of the instructor. May be repeated for credit with different topic.

**ARABIC 304-0 Translation in Practice: A Bridge to the Future (1 Unit)** This unique foundational courses introduces students to translation skills to provide them with a competitive edge on the job market. Honing grammatical as well as stylistic facility in Arabic, the course promotes higher-level linguistic analysis and interpretation by following a problem-solving approach in translation. Prerequisite: Strong performance in two or average performance in three 200-level Arabic courses, or instructor permission.

**ARABIC 316-1 Reading Arabic Poetry (1 Unit)** Advanced class reading, analyzing, and discussing G18 Arabic Poetry. Content varies. May be

repeated for credit with different topic. Open to heritage speakers. Prerequisite: 211-3 or equivalent. *Literature Fine Arts Distro Area*

**ARABIC 316-2 Reading Classical Arabic Texts (1 Unit)** Advanced class reading, analyzing, and discussing Classical Arabic texts. Content varies. May be repeated for credit with different topic. Open to heritage speakers. Prerequisite: ARABIC 211-3 or equivalent. *Literature Fine Arts Distro Area*

**ARABIC 316-3 Reading Modern Arabic Prose (1 Unit)** Advanced class reading, analyzing, and discussing Modern Arabic prose. Content varies. May be repeated for credit with different topic. Open to heritage speakers. Prerequisite: ARABIC 211-3 or equivalent. *Literature Fine Arts Distro Area*

**ARABIC 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Arabic. Prerequisite: consent of instructor.

**HEBREW 111-1 Hebrew I (1 Unit)** This sequence offers students a systematic introduction to Hebrew language and culture. Emphasizes the four modalities-speaking, listening comprehension, reading, and writing. Prerequisite: None or one year of high-school Hebrew or placement test results.

**HEBREW 111-2 Hebrew I (1 Unit)** This sequence offers students a systematic introduction to Hebrew language and culture. Emphasizes the four modalities-speaking, listening comprehension, reading, and writing. Prerequisite: HEBREW 111-1 or equivalent.

**HEBREW 111-3 Hebrew I (1 Unit)** This sequence offers students a systematic introduction to Hebrew language and culture. Emphasizes the four modalities-speaking, listening comprehension, reading, and writing. Prerequisite: HEBREW 111-2 or equivalent.

**HEBREW 121-1 Hebrew II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in Hebrew. Offers insights into Hebrew culture and history through written and audiovisual materials. Prerequisite: HEBREW 111-3 or equivalent.

**HEBREW 121-2 Hebrew II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in Hebrew. Offers insights into Hebrew culture and history through written and audiovisual materials. Prerequisite: HEBREW 121-1 or equivalent.

**HEBREW 121-3 Hebrew II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in Hebrew. Offers insights into Hebrew culture and history through written and audiovisual materials. Prerequisite: HEBREW 121-2 or equivalent.

**HEBREW 211-0 Hebrew III: Language and Culture (1 Unit)** Introduction to and practice of intermediate and advanced grammatical concepts in Hebrew through authentic cultural texts and current media sources. The course focuses on speaking, listening comprehension, reading, and writing skills. Prerequisite: HEBREW 121-3.

**HEBREW 216-1 Hebrew III: Topics in Hebrew Literature (1 Unit)** Hebrew language, literature, and culture. Material includes authentic written and audiovisual material such s films, TV shows, newspaper articles and literary pieces. Review of more complex grammar including the development of reading, writing, and speaking skills. Prerequisite: HEBREW 121-3 or equivalent. *Literature Fine Arts Distro Area*

**HEBREW 216-2 Hebrew III: Topics in Hebrew Literature (1 Unit)** Hebrew language, literature, and culture. Material includes authentic written and audiovisual material such s films, TV shows, newspaper articles and literary pieces. Review of more complex grammar including the development of reading, writing, and speaking skills. Prerequisite: HEBREW 121-3 or equivalent. *Literature Fine Arts Distro Area*

**HEBREW 216-3 Hebrew III: Topics in Hebrew Literature (1 Unit)** Hebrew language, literature, and culture. Material includes authentic written

and audiovisual material such as films, TV shows, newspaper articles and literary pieces. Review of more complex grammar including the development of reading, writing, and speaking skills. Prerequisite: HEBREW 121-3 or equivalent. *Literature Fine Arts Distro Area*

**HEBREW 245-0 Current Events in Israel: Israeli Society through Online News Media (1 Unit)** This course focuses on current events in Israel through in-depth exploration of online news media sources such as foreign newspaper articles and videos. Students will gain respect for alternative ideas and diversity of views and learn how news and public opinion are chosen, disseminated, shared. The course focuses on reading, listening, discussion and on building a comprehensive Hebrew vocabulary. Prerequisite: HEBREW 121-3 or permission of the instructor. May be repeated for credit with different topic.

**HEBREW 316-1 Hebrew IV: Advanced Topics in Hebrew Literature (1 Unit)** Literature Reading 20th-century Hebrew literature. Presentations, discussion, and essays in Hebrew. Prerequisite: Three Hebrew courses at the 200-level or consent of instructor. *Literature Fine Arts Distro Area*

**HEBREW 316-2 Hebrew IV: Advanced Topics In Hebrew Literature (1 Unit)** Literature Reading 20th-century Hebrew literature. Presentations, discussion, and essays in Hebrew. Prerequisite: Three Hebrew courses at the 200-level or consent of instructor. *Literature Fine Arts Distro Area*

**HEBREW 316-3 Hebrew IV: Advanced Topics in Hebrew Literature (1 Unit)** Literature Reading 20th-century Hebrew literature. Presentations, discussion, and essays in Hebrew. Prerequisite: Three Hebrew courses at the 200-level or consent of instructor. *Literature Fine Arts Distro Area*

**HEBREW 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Hebrew. Prerequisite: consent of instructor.

**PERSIAN 111-1 Persian I (1 Unit)** This sequence emphasizing speaking, listening comprehension, reading, and writing offers students a systematic introduction to formal Persian. Insights into Persian history and culture. Prerequisite: None or placement test results.

**PERSIAN 111-2 Persian I (1 Unit)** This sequence emphasizing speaking, listening comprehension, reading, and writing offers students a systematic introduction to formal Persian. Insights into Persian history and culture. PERSIAN 111-1 or equivalent.

**PERSIAN 111-3 Persian I (1 Unit)** This sequence emphasizing speaking, listening comprehension, reading, and writing offers students a systematic introduction to formal Persian. Insights into Persian history and culture. Prerequisite: PERSIAN 111-2 or equivalent.

**PERSIAN 121-1 Persian II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in formal Persian through written and audiovisual materials, including newspapers, short stories, poems, television, film. Offers also insights into Persian culture and history. Prerequisite: PERSIAN 111-3 or equivalent.

**PERSIAN 121-2 Persian II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in formal Persian through written and audiovisual materials, including newspapers, short stories, poems, television, film. Offers also insights into Persian culture and history. Prerequisite: PERSIAN 121-1 or equivalent.

**PERSIAN 121-3 Persian II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing skills in formal Persian through written and audiovisual materials, including newspapers, short stories, poems, television, film. Offers also insights into Persian culture and history. Prerequisite: PERSIAN 121-2 or equivalent.

**PERSIAN 399-0 Independent Study (1 Unit)** For students who have advanced with distinction beyond the regular course offerings in Persian. Prerequisite: consent of instructor.

**TURKISH 111-1 Turkish I (1 Unit)** This sequence offers students a systematic introduction to Turkish language and culture through TV shows. Students will immerse themselves in the personal stories and everyday realities of life in Istanbul. Course emphasizes speaking, listening comprehension, reading, and writing. Prerequisite: None or one year of high-school Turkish or placement test results.

**TURKISH 111-2 Turkish I (1 Unit)** This sequence offers students a systematic introduction to Turkish language and culture through TV shows. Students will immerse themselves in the personal stories and everyday realities of life in Istanbul. Course emphasizes speaking, listening comprehension, reading, and writing. Prerequisite: TURKISH 111-1 or equivalent.

**TURKISH 111-3 Turkish I (1 Unit)** This sequence offers students a systematic introduction to Turkish language and culture through TV shows. Students will immerse themselves in the personal stories and everyday realities of life in Istanbul. Course emphasizes speaking, listening comprehension, reading, and writing. Prerequisite: Turkish 111-2 or placement test results.

**TURKISH 121-1 Turkish II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing, through the use of printed and audiovisual materials in Turkish. Offers insights into modern Turkish culture. Prerequisite: TURKISH 111-3 or equivalent.

**TURKISH 121-2 Turkish II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing, through the use of printed and audiovisual materials in Turkish. Offers insights into modern Turkish culture. Prerequisite: TURKISH 121-1 or equivalent.

**TURKISH 121-3 Turkish II (1 Unit)** This sequence further develops speaking, listening comprehension, reading, and writing, through the use of printed and audiovisual materials in Turkish. Offers insights into modern Turkish culture. Prerequisite: TURKISH 121-2 or equivalent.

## Arabic Minor

The *Minor in Arabic* is designed for students who wish to gain a high level of proficiency in Arabic to understand and interact with communities of different ethnicities and cultures in the Middle East and to embrace diversity, equity, and inclusion. The course work leading to the *Minor in Arabic* is carefully scaffolded along a set of overarching learning principles that inform the pedagogical tasks employed in each class. The *Minor in Arabic* is available to all students with at least two years of Arabic language studies or its equivalent.

Course	Title
<b>Prerequisite</b> <sup>1</sup>	
ARABIC 121-3	Arabic II (or equivalent proficiency)
<b>Minor Requirements (6 units)<sup>2</sup></b>	
<i>Third-year level sequence; recommended starting sequence for non-heritage Arabic speakers (see explanation below)</i>	
ARABIC 211-1	Arabic III
ARABIC 211-2	Arabic III
ARABIC 211-3	Arabic III
<i>Content-based language courses (see explanation below)</i>	
ARABIC 216-0	Language and Culture
ARABIC 245-0	Current Events in the Middle East: Arab Society through Online News Media
ARABIC 304-0	Translation in Practice: A Bridge to the Future

ARABIC 316-1	Reading Arabic Poetry
ARABIC 316-2	Reading Classical Arabic Texts
ARABIC 316-3	Reading Modern Arabic Prose

- <sup>1</sup> Beginner students start with the Arabic I sequence (ARABIC 111-1, ARABIC 111-2, ARABIC 111-3) and continue to the Arabic II sequence (ARABIC 121-1, ARABIC 121-2, ARABIC 121-3) as prerequisite to the minor.
- <sup>2</sup> At least two of the 6 courses in Arabic must be at the 300-level. No more than 1 unit of ARABIC 399-0 may be applied as a 300-level unit towards the minor.

### Third-year Level Language Sequence

The program offers a 3-course language sequence on the third-year level which is based on work with a language textbook with carefully sequenced grammar and culture exercises. While not mandatory, we encourage our students to take this sequence first. However, native or near native speakers of Arabic skip these and must select courses from the content-based course list.

### Content-Based Language Courses

The program also offers content-based language courses on the 200-level and 300-level. In content-based courses, the thematic content - topics that students find interesting and relevant - provides the materials (mostly authentic language documents) around which listening, speaking, reading, and writing activities are created. Content-based courses are self-contained and do not need to be taken in a sequence.

### Study Abroad Policy

Language courses taken abroad may be counted towards the minor with the approval of the MENA Languages Program. It is essential that students returning from abroad take the Arabic language placement test as soon as possible so that they can be placed into the appropriate course. Only study abroad courses above the level of ARABIC 121-3 can be counted towards the minor. The Arabic minor must be completed with at least 3 units of coursework at Northwestern.

## Middle East and North African Studies

mena.northwestern.edu

Study of the Middle East and North Africa is vital, given the region's centrality in history and politics and a liberal education's focus on the diversity of the human experience. The Middle East and North African Studies Program incorporates the latest critical approaches to social, cultural, political, and economic forces in the region, which stretches roughly from Morocco to Iran and Central Asia, from the Mediterranean into Saharan Africa and the Sudan. The program trains students in histories, literatures, and sociocultural specificities while encouraging consideration of the region's global integration. It advances fresh perspectives on Middle East studies by inquiring how the cultural, political, and economic conditions of globalization influence the region internally and externally.

Drawn from anthropology, art history, history, literature, media studies, political science, religion, and radio/television/film, among other areas, the faculty represent a variety of perspectives, with a focus on the 19th, 20th, and 21st centuries. It reflects Northwestern's strengths in diaspora studies, Islam in trans-Saharan Africa, media studies, cultural production, and North African studies. The program embraces comparative approaches, both cross-regional and cross-disciplinary.

Course topics include the Middle East and North Africa in international politics, mass media, migration, digital cultures, arts and literature, law, and religious movements.

The major and the minor prepare students for careers in a variety of fields, including law, government, human rights, international development, and cultural organizations.

## Programs of Study

- Middle East and North African Studies Major (p. 377)
- Middle East and North African Studies Minor (p. 377)

For language courses see the MENA Languages Program (p. 373).

## Courses Taught in English

**MENA 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**MENA 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**MENA 200-0 Making the Modern Middle East: Culture, Politics, History (1 Unit)** The emergence of the Middle East as a world region and its representation in art, literature, and film in relation to geopolitics from the colonial period to the present. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area*

**MENA 290-3 Introductory Topics in Middle East and North African Studies (1 Unit)** Content and prerequisites vary; within the social and behavioral sciences. May be repeated for credit with change of topic. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Disciplines*

**MENA 290-4 Introductory Topics in Middle East and North African Studies (1 Unit)** Content and prerequisites vary; within historical studies. May be repeated for credit with change of topic. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**MENA 290-5 Introductory Topics in Middle East and North African Studies (1 Unit)** Content and prerequisites vary; within ethics and values areas of study. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disciplines Ethics Values Distro Area*

**MENA 290-6 Introductory Topics in Middle East and North African Studies (1 Unit)** Content and prerequisites vary; within literature and fine arts areas of study. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**MENA 301-1 Seminar in Middle East and North African Studies (1 Unit)** Interdisciplinary approaches to the study of the Middle East and North Africa. Content varies with annual theme. May be repeated for credit with a change in topic. Courses need not be taken in sequence.

**MENA 301-2 Seminar in Middle East and North African Studies (1 Unit)** Interdisciplinary approaches to the study of the Middle East and North Africa. Content varies with annual theme. May be repeated for credit with a change in topic. Courses need not be taken in sequence.

**MENA 301-3 Seminar in Middle East and North African Studies (1 Unit)** Interdisciplinary approaches to the study of the Middle East and North

Africa. Content varies with annual theme. May be repeated for credit with a change in topic. Courses need not be taken in sequence.

**MENA 390-3 Advanced Topics in Middle East & North African Studies (1 Unit)** Content and prerequisites vary; within the social and behavioral sciences. May be repeated for credit with change of topic. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipline*

**MENA 390-4 Advanced Topics in Middle East & North African Studies (1 Unit)** Content and prerequisites vary; within historical studies. May be repeated for credit with change of topic. *Historical Studies Distro Area Historical Studies Foundational Discipline*

**MENA 390-5 Advanced Topics in Middle East & North African Studies (1 Unit)** Content and prerequisites vary; within ethics and values areas of study. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**MENA 390-6 Advanced Topics in Middle East & North African Studies (1 Unit)** Content and prerequisites vary; within literature and fine arts areas of study. May be repeated for credit with change of topic. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**MENA 399-0 Independent Study (1 Unit)** Reading and conferences on special subjects for advanced undergraduates. Prerequisite: consent of director of undergraduate studies and instructor.

## Middle East and North African Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Major Requirements (15 units)

- Language requirement: 6 courses in Arabic, Hebrew, Persian, or Turkish beyond the first year
  - Native-speaker proficiency, determined by testing, fulfills the language requirement but does not count for course credit. Native speakers may complete this 6-course requirement with courses in a second MENA language or approved MENA content courses.
  - Students completing the Minor in Arabic may use courses applied to the minor to fulfill the MENA Studies language proficiency requirement. However, course credits applied to the Minor in Arabic cannot be double-counted as course credits for the MENA Studies major. Students may substitute units of MENA content courses and/or non-Arabic MENA language courses to complete the 6 required units.
- MENA 200-0 Making the Modern Middle East: Culture, Politics, History
- 2 quarters of Seminar in Middle East and North African Studies (MENA 301-1, MENA 301-2, MENA 301-3).
- 6 additional courses, each chosen from the approved program list for the quarter or with the director.
  - Distributed among three disciplinary categories
    - 2 in history
    - 2 in social sciences (including anthropology, economics, linguistics, political science, psychology, and sociology)

- 2 in humanities (including art history, art theory and practice, comparative literary studies, English, humanities, philosophy, and religious studies)
- At least 5 of the 6 must be primarily focused on the Middle East and/or North Africa.
- Additional quarters of Seminar in Middle East and North African Studies (MENA 301-1, MENA 301-2, MENA 301-3) count in the disciplinary category of the respective instructor.
- At most 2 courses may be double-counted toward another major.
- The major also requires a study abroad experience in the Middle East or North Africa, either during the summer via intensive language study or other study abroad, or during the academic year; consult the program director for advice and approval. Students may petition for a waiver or modification of this requirement in exceptional cases.

## Honors in Middle East and North African Studies

The MENA Program offers exceptional students the opportunity to write a year long Senior Honors Thesis with a faculty adviser drawn from the Core Faculty of the MENA Program. Majors with strong academic records and an interest in pursuing honors should submit an honors application, including a brief research proposal, to the program office by the third week of spring quarter of junior year. Students studying abroad during the spring of their junior year are required to contact the MENA Director about their intentions in writing (email is acceptable). Accepted students complete a thesis, normally through 2 quarters of senior-year independent study (MENA 399-0); the two units must be counted toward different disciplinary categories.

Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information consult the program website (<https://www.mena.northwestern.edu/undergraduate/honors.html>), visit the program office, and see Honors in the Major (p. 222).

## Middle East and North African Studies Minor

### Minor Requirements (8 units)

- Each course must be chosen from the approved MENA studies list for the quarter or with the director and must relate to the Middle East or North Africa.
- At most two courses from study abroad may count towards the MENA studies minor.
- Foreign language study is not required for the minor, and no more than 2 courses may be Arabic, Hebrew, Persian, or Turkish language courses.
- At least 2 courses should be selected in each of the three disciplinary categories: history, social sciences, and humanities.
- Students who satisfactorily complete two years of language study in Arabic, Hebrew, Persian, or Turkish may complete the minor with only 6 disciplinary courses.
- Native-speaker proficiency does not count for course credit; native speakers may count 2 nonnative MENA language courses among the 8 courses.

## Molecular Biosciences

See Biological Sciences (p. 249).

## Native American and Indigenous Studies

[cnair.northwestern.edu/academics/](http://cnair.northwestern.edu/academics/) (<https://cnair.northwestern.edu/academics/>)

The Native American and Indigenous Studies (NAIS) minor is a program designed for students who are eager to engage with the priorities, histories, lifeways, and artistic or cultural practices related to Native American and Indigenous communities. The curriculum, firmly rooted in Indigenous methodologies, ethics, and theoretical perspectives, builds upon the contributions of key NAIS scholars. This interdisciplinary minor necessitates the completion of six courses that highlight the social and natural worlds, creative expression, and global Indigeneity. Through disciplines such as history, anthropology, literature, global health, learning sciences, and environmental studies, the program fosters a comprehensive understanding of Indigenous identities, underlining their political dynamics, cultural innovations, and global interconnectedness.

Key topics like sovereignty, self-determination, and resistance are integral components of the coursework. This emphasis on Indigenous epistemologies enhances students' understanding of their pivotal roles in societal formation, both within and beyond U.S. borders.

The NAIS minor not only sharpens investigative, analytical, and critical skills but also fuels intellectual creativity, empowering students to tackle the challenges of the 21st century. It readies them for a diverse array of careers in law, education, social work, health, or public policy, while enriching their insight into the complex issues Indigenous communities encounter.

For any questions or inquiries, the director of the minor can be reached through the contact information available on the NAIS minor webpage (<https://cnair.northwestern.edu/academics/nais-minor/>).

## Program of Study

- Native American and Indigenous Studies Minor (p. 378)

See a list of courses by year on the NAIS Courses webpage (<https://cnair.northwestern.edu/academics/courses/>) and the procedure for declaring the minor on the NAIS minor webpage (<https://cnair.northwestern.edu/academics/nais-minor/>).

## Native American and Indigenous Studies Minor

The minor in Native American and Indigenous Studies (NAIS) requires courses from across a variety of departments. Courses reflect the four scholarly directions of **Creative Expression** (literature, dance, music, art, theater, and ceremony), **Social Worlds** (history, anthropology, journalism, sociology, law, education, policy, public health, and media), **Natural Worlds** (science, traditional ecological knowledge, environmental psychology, political science, health, and medicine), and **Global Indigeneity** (intercultural, transnational, Latinx studies, and Pacific Islands studies).

## Minor Requirements (6 units)

- 1 **Foundational** course (ENGLISH 274-0, SOCIO 277-0 or other approved class)
- 2 courses selected from **Creative Expression or Social Worlds** categories (such as ENGLISH 374-0, JOUR 367-0 or other approved class)
- 2 courses selected from **Natural Worlds or Global Indigeneity** categories (such as ANTHRO 328-0, POLI\_SCI 349-0, SPANISH 340-0, or other approved class)
- 1 **advanced-level** elective course, independent study, or a capstone project in a contributing department or program and approved by the CNAIR curriculum committee.

Classes taught under ANTHRO 390-0, ASIAN\_AM 276-0, ENGLISH 313-0, ENGLISH 378-0, ENVR\_POL 390-0, GBL\_HLTH 390-0, HISTORY 200-0, HISTORY 300-0, HISTORY 393-0, JOUR 390-0, LEGAL\_ST 376-0, and others may also be eligible to count towards the minor.

## Additional Information

For more details and an up-to-date listing of courses consult the NAIS Course webpage (<https://cnair.northwestern.edu/academics/courses/>) or contact NAIS advising (<https://cnair.northwestern.edu/academics/nais-minor/minor-nais1.html>).

## Neurobiology

[neurobiology.northwestern.edu](http://neurobiology.northwestern.edu)

The Department of Neurobiology offers a major in neuroscience, the study of the nervous system from the level of individual genes and proteins that control neural activity through mechanisms that govern complex human behavior and cognition. Although traditionally associated with biology and psychology, modern neuroscience is highly interdisciplinary and integrates approaches and ideas from many other areas, including chemistry, physics, mathematics, linguistics, communication sciences, computer science, and engineering. The interdisciplinary nature of neuroscience is reflected in the neuroscience curriculum, which provides

- A deep understanding of the structure and function of nervous systems and the mechanisms by which the brain generates behavior, as well as of the history, major ideas, and research approaches used in neuroscience
- Knowledge and experience in an allied field to develop interdisciplinary skills for diverse careers
- A strong foundation in principles of chemistry, mathematics, physics, and molecular biology, as well as practical knowledge in computer programming and statistics
- Laboratory coursework or independent laboratory research

Students interested in neuroscience should complete the chemistry and math courses and BIOL\_SCI 201-0 Molecular Biology listed under related courses in their first year. NEUROSCI 202-0 Cellular and Molecular Neuroscience is taken as early as is practical followed by NEUROSCI 206-0 Systems and Behavioral Neuroscience before taking 300-level NEUROSCI courses. Neuroscience electives and allied field courses are listed on our website.

Students are strongly encouraged to meet with neuroscience advisers to develop a course plan that provides exceptional preparation for graduate study in neuroscience or a related field; for medical school; and for

careers in science writing and journalism, patent law, science policy, education and outreach, and the pharmaceutical, biotech, and other industries.

Practical research experience is highly encouraged. See the department website for credit-bearing research opportunities with affiliated world-class faculty.

## Programs of Study

- Neuroscience Major (p. 380)
- Neuroscience Second Major for ISP Students (p. 384)

**NEUROSCI 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**NEUROSCI 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**NEUROSCI 202-0 Cellular and Molecular Neuroscience (1 Unit)** Introduction to principles governing nervous system function at the cellular and molecular level. May not receive credit for both NEUROSCI 202-0 and BIOL\_SCI 302-0. Prerequisites: BIOL\_SCI 201-0 and must be a neuroscience major. *Natural Sciences Distro Area*

**NEUROSCI 206-0 Systems and Behavioral Neuroscience (1 Unit)** Introduction to the organization and function of brain systems and their role in generating behavior. Prerequisite: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0. *Natural Sciences Distro Area*

**NEUROSCI 303-0 Molecular Mechanisms of Neuropsychopharmacology (1 Unit)**

Advanced seminar focusing on molecular mechanisms and aberrations of synaptic signal transduction and drugs that target them.

Prerequisite: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0.

**NEUROSCI 304-0 Developmental Neurobiology (1 Unit)**

Embryology and cellular/molecular mechanisms of nervous system development. Topics include patterning of the early embryo and nervous system, neurogenesis, neuronal differentiation and cell fate specification, axon guidance and wiring of neural circuits, and activity-, experience-, and sex-dependent neurodevelopment.

Prerequisite: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0.

**NEUROSCI 308-0 Genetics of Human Behavior (1 Unit)**

Covers the genetic determinants of human behavior. We discuss how "nature" (genes) and "nurture" contribute to shape individual behavior and explore the implications of this interaction, from philosophical and ethical aspects to medical and legal considerations.

Prerequisites: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0.

**NEUROSCI 311-0 Biophysical Analysis of Neurons for ISP (1 Unit)**

This course provides an introduction to neurobiology from an electrophysiological perspective, with an emphasis on ion channel biophysics, quantitative electrical properties of neurons, synaptic physiology, and sensory transduction. Its goal is to provide a basis for understanding how information is encoded, transmitted, and decoded in brains, as well as offer an introduction to reading scientific literature. Some facility with simple equations and graphing is suggested.

Prerequisite: Students must be an ISP or NEUROSCI major to enroll.

## NEUROSCI 320-0 Animal Behavior (1 Unit)

Animal behavior from the neuroscience perspective. Neurobiological bases of foraging, communication, migration, predator-prey interactions, mating, and parental care.

Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

*Natural Sciences Distro Area*

## NEUROSCI 324-0 Neurobiology of Biological Clocks and Sleep (1 Unit)

General properties of sleep and circadian rhythms; how sleep and the circadian clock regulate a number of diverse activities at the cell, organ, and organism levels. The importance of biological rhythms and sleep for human health and disease will be covered in the course. Prerequisite: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0.

## NEUROSCI 325-0 Neurobiology of Stress, Adversity, and Resilience (1 Unit)

This is a writing-intensive course based on class lectures and discussion that draws from primary literature on the neurobiology of stress, stress susceptibility and resilience, to explore biological mechanisms by which adversity can influence mental health and other outcomes.

Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

## NEUROSCI 326-0 Neurobiology of Learning and Memory (1 Unit)

This course examines how brain cells and neural circuits process experience to produce lasting changes in behavior. In depth discussion of original research findings, with a focus on the latest molecular, neural physiology, and behavioral studies. Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

## NEUROSCI 350-0 Advanced Neurophysiology Laboratory (1 Unit)

Learn to record electrophysiological signals (action potentials and post synaptic potentials) from living neural systems using amplifiers and recording equipment commonly found in research labs around the world. Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0; and consent of instructor.

## NEUROSCI 355-0 Neurogenetics of Behavior Laboratory (1 Unit)

Project-based laboratory investigating the genetic basis of behavior in a simple model system; molecular genetic techniques used in neurobiology. Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

**NEUROSCI 357-0 Neuroanatomy Laboratory (1 Unit)** Comparative anatomy and dissection to understand the functions of brain regions by comparing their structures across the major vertebrate classes. Includes clinical anatomy and case studies to understand the functions of brain regions by drawing connections between neurological symptoms and the localization of lesions. Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

## NEUROSCI 360-0 Neuroscience of Brain Disorders (1 Unit)

Survey of brain disorders and differences such as neurodegenerative diseases, developmental disorders, narcolepsy, and migraine with a focus on molecular-genetic mechanisms. Trace progress from the laboratory to the clinic, evaluate the state of knowledge, and understand future directions. Prior review of basic genetics and molecular biology is strongly recommended.

Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

*Natural Sciences Distro Area*

## NEUROSCI 365-0 Neurobiology of Prediction (1 Unit)

This course examines neurophysiological circuit mechanisms that allow prediction to emerge in brains of (mostly) non-human animals. Topics include probability and variance, anticipation of aversive and rewarding stimuli, temporal and spatial prediction, and how cellular-level studies inform complex questions of human prediction.

Prerequisite: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0.

#### **NEUROSCI 370-0 Genetic and Circuit Analysis of Motivated Behavior (1 Unit)**

Animals are programmed to behave strongly towards activities that satisfy our basic needs and enhance our chances of survival. This includes eating, drinking, sex, and social interaction. Focusing on neurobiology of eating, we will read scientific articles, learn about cutting edge experimental techniques, discuss concepts, and hone oral presentation skills.

Prerequisites: NEUROSCI 202-0 and NEUROSCI 206-0; or NEUROSCI 311-0 and NEUROSCI 206-0; or BIOL\_SCI 302-0.

#### **NEUROSCI 377-0 Neurobiology of Sensation and Perception (1 Unit)**

Analysis of the key concepts underlying the neurobiological mechanisms of vision, hearing, taste, smell, touch, and pain. Neural pathways leading to perception and processing of stimuli will also be discussed.

Prerequisite: NEUROSCI 202-0 or NEUROSCI 311-0 or BIOL\_SCI 302-0.

*Natural Sciences Distro Area*

**NEUROSCI 390-0 Topics in Neuroscience (1 Unit)** Special Topics in Neuroscience. Topics to be announced. Prerequisites vary. May be repeated for credit with different topic. May be used to fulfill a Neuroscience Group B elective or serve as an Biology Allied Field course.

**NEUROSCI 398-0 Senior Thesis Seminar (1 Unit)** Instruction in writing a scientific thesis, discussion of student projects, instructor and peer feedback on thesis drafts, and continued independent research. Required of seniors pursuing departmental honors, with approval of the director of undergraduate studies. *Advanced Expression*

#### **NEUROSCI 399-0 Independent Study in Neuroscience (1 Unit)**

Supervised laboratory or methods research with a faculty member. Research must be related to Neuroscience. Prerequisite: Must be a Neuroscience major, departmental permission required (see website for details.).

## **Neuroscience Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## **Neuroscience major requirements**

- 6 Neuroscience units (courses may not be double-counted with Allied Field courses or required Related Courses for the major)
  - 2 200-level NEUROSCI core courses (p. 380)
  - 2 Group A Elective (p. 380) courses (have a primary focus on human behavior and the human brain)
  - 2 Group B Elective (p. 381) courses (have a primary focus on molecular, cellular, and systems-level mechanisms of brain function)
- 4 Allied Field units, at least 2 of which must be 300-level or above, chosen from one of the following areas. Courses may not be double-

counted with the 6 Neuroscience units or required Related Courses for the Neuroscience major. No more than 2 Allied Field courses may be double-counted with another major and none with a minor.

- Biology (p. 381)
- Chemistry (p. 381)
- Computation and Systems Modeling (p. 382)
- Human Behavior and Cognition (p. 382)
- Language and Human Communication (p. 382)
- Ad hoc Allied Field - some other area chosen with approval of the director of undergraduate studies
- Related Courses (units depend on math and science sequences taken)
  - BIOL\_SCI 201-0 Molecular Biology
  - Calculus sequence (p. 383)
  - General Chemistry sequence (p. 383) with labs
  - 1 Computer Programming (p. 383) course from list of approved courses
  - General Physics sequence (p. 383) with labs
  - 1 Statistics course (p. 384) from list of approved courses
- Laboratory Experience (p. 383) requirement
  - Courses that satisfy the laboratory experience requirement may also be used to satisfy another requirement for the major.
  - If two units of Undergraduate Research (398/399) are used for the Laboratory Experience requirement, they may also substitute for one course in any Allied Field.

## **Neuroscience Course Lists**

### **Required Neuroscience core courses:**

Course	Title
NEUROSCI 202-0	Cellular and Molecular Neuroscience
NEUROSCI 206-0	Systems and Behavioral Neuroscience

### **Neuroscience Group A Electives (students choose 2):**

Course	Title
COG_SCI 210-0	Language and the Brain
CSD 303-0 or PSYCH 327-0	Brain and Cognition
CSD 310-0	Biological Foundations of Speech and Music
PSYCH 110-0	Introduction to Psychology
PSYCH 228-0	Cognitive Psychology
PSYCH 244-0	Developmental Psychology
PSYCH 248-0	Health Psychology
PSYCH 324-0	Perception
PSYCH 328-0	Brain Damage and the Mind
PSYCH 330-0	Special Topics in Cognition/Neuroscience <sup>1</sup>
PSYCH 336-0	Consciousness
PSYCH 378-0	Images of Cognition
PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience <sup>2</sup>
PSYCH 392-0	Advanced Seminar in Psychology <sup>3</sup>

<sup>1</sup> PSYCH 330-0 when topic is, "Brain and Language."

<sup>2</sup> PSYCH 391-0 when class topic is, "Left Brain, Right Brain," "Creative Problem Solving," or "Language and the Mind." For other topics, a syllabus may be provided to the DUS for consideration.

<sup>3</sup> PSYCH 392-0 when class topic is, "Psychoneuroimmunology," or "Emotional Brain." For other topics a syllabus may be provided to the DUS for consideration.

**Neuroscience Group B Electives (students choose 2):**

Course	Title
Biol_Sci 303-0	Molecular Neurobiology
Biol_Sci 307-0	Brain Structure, Function, and Evolution
ES_APPM 370-1	Introduction to Computational Neuroscience
NEUROSCI 303-0	Molecular Mechanisms of Neuropsychopharmacology
NEUROSCI 304-0	Developmental Neurobiology
NEUROSCI 308-0	Genetics of Human Behavior
NEUROSCI 311-0	Biophysical Analysis of Neurons for ISP (If not used in place of NEUROSCI 202-0)
NEUROSCI 320-0	Animal Behavior
NEUROSCI 324-0	Neurobiology of Biological Clocks and Sleep
NEUROSCI 325-0	Neurobiology of Stress, Adversity, and Resilience
NEUROSCI 326-0	Neurobiology of Learning and Memory
NEUROSCI 350-0	Advanced Neurophysiology Laboratory
NEUROSCI 355-0	Neurogenetics of Behavior Laboratory
NEUROSCI 357-0	Neuroanatomy Laboratory
NEUROSCI 360-0	Neuroscience of Brain Disorders
NEUROSCI 365-0	Neurobiology of Prediction
NEUROSCI 370-0	Genetic and Circuit Analysis of Motivated Behavior
NEUROSCI 377-0	Neurobiology of Sensation and Perception
NEUROSCI 390-0	Topics in Neuroscience

**Allied Field Course Lists****Biology (any 4 units, at least 2 of which must be 300-level or above)**

Course	Title
300-level NEUROSCI courses listed under Neuroscience Group B Electives above are eligible if not being used as a Group B course.	
This Allied Field is not available to students doing the major in biological sciences with a concentration in Molecular Neurobiology.	
Biol_Sci 202-0	Cell Biology
Biol_Sci 203-0	Genetics and Evolution
Biol_Sci 232-0	Molecular and Cellular Processes Laboratory (0.34 units)
Biol_Sci 233-0	Genetics and Molecular Processes Laboratory (0.34 units)
Biol_Sci 234-0	Investigative Laboratory (0.34 units)
Biol_Sci 301-0	Principles of Biochemistry
Biol_Sci 303-0	Molecular Neurobiology
Biol_Sci 307-0	Brain Structure, Function, and Evolution
Biol_Sci 310-0	Human Physiology
Biol_Sci 315-0	Advanced Cell Biology
Biol_Sci 319-0	Biology of Animal Viruses
Biol_Sci 323-0	Bioinformatics: Sequence and Structure Analysis
Biol_Sci 325-0	Animal Physiology
Biol_Sci 327-0	Biology of Aging
Biol_Sci 328-0	Microbiology
Biol_Sci 338-0	Modeling Biological Dynamics
Biol_Sci 341-0	Population Genetics
Biol_Sci 354-0	Systems Biology
Biol_Sci 355-0	Immunobiology
Biol_Sci 360-0	Principles of Cell Signaling
Biol_Sci 361-0	Protein Structure and Function
Biol_Sci 363-0	Biophysics
Biol_Sci 377-0	The Human Microbiome
Biol_Sci 378-0	Functional Genomics
Biol_Sci 380-0	Biology of Cancer

Biol_Sci 381-0	Stem Cells and Regeneration
Biol_Sci 390-0	Molecular Biology of Genome Editing and Engineering
Biol_Sci 391-0	Developmental Biology
Biol_Sci 392-0	Morphogenesis
Biol_Sci 393-0	Human Genomics
Biol_Sci 395-0	Molecular Genetics
CHEM 215-1	Organic Chemistry I
CHEM 215-2	Organic Chemistry II
CHEM 215-3	Organic Chemistry III
CHEM 235-1	Organic Chemistry Lab I (0.34 units)
CHEM 235-2	Organic Chemistry Lab II (0.34 units)
CHEM 235-3	Organic Chemistry Lab III (0.34 units)
The six chemistry courses above have substantial overlap with the 217 and 237 series below. Consult with the Chemistry director of undergraduate studies for exact equivalencies.	
CHEM 217-1	Accelerated Organic Chemistry I
CHEM 217-2	Accelerated Organic Chemistry II
CHEM 217-3	Accelerated Organic Chemistry III
CHEM 237-1	Accelerated Organic Chemistry Laboratory I
CHEM 237-2	Accelerated Organic Chemistry Laboratory II

**Chemistry (any 4 units, at least 2 of which must be 300-level or above)**

Course	Title
CHEM 215-1	Organic Chemistry I
CHEM 215-2	Organic Chemistry II
CHEM 215-3	Organic Chemistry III
CHEM 235-1	Organic Chemistry Lab I (0.34 units)
CHEM 235-2	Organic Chemistry Lab II (0.34 units)
CHEM 235-3	Organic Chemistry Lab III (0.34 units)
The six courses above have substantial overlap with the 217 and 237 series below. Consult with the Chemistry director of undergraduate studies for exact equivalencies.	
CHEM 217-1	Accelerated Organic Chemistry I
CHEM 217-2	Accelerated Organic Chemistry II
CHEM 217-3	Accelerated Organic Chemistry III
CHEM 237-1	Accelerated Organic Chemistry Laboratory I
CHEM 237-2	Accelerated Organic Chemistry Laboratory II
also	
CHEM 220-0	Introductory Instrumental Analysis
CHEM 305-0	Chemistry of Life Processes
CHEM 306-0	Environmental Chemistry
CHEM 307-0	Supramolecular Design of Materials and Nanostructures
CHEM 308-0	Design, Synthesis, and Applications of Nanomaterials
CHEM 313-0	Advanced Organic Chemistry 1. Advanced concepts of organic reactivity and selectivity in synthesis.
CHEM 314-0	Principles of Chemical Biology
CHEM 316-0	Medicinal Chemistry: the Organic Chemistry of Drug Design and Action
CHEM 319-0	Advanced Organic Synthesis - Concepts and Applications
CHEM 342-1	Thermodynamics
CHEM 342-2	Quantum Mechanics and Spectroscopy
CHEM 342-3	Kinetics and Statistical Thermodynamics
CHEM 348-0	Physical Chemistry for ISP
CHEM 350-1	Advanced Laboratory 1
CHEM 350-2	Advanced Laboratory 2

CHEM 350-3	Advanced Laboratory 3	PHYSICS 339-2	Quantum Mechanics
CHEM 393-0	Green Chemistry	PHYSICS 339-3	Particle and Nuclear Physics
<b>Computation and Systems Modeling (any 4 units, at least 2 of which must be 300-level or above)</b>			
<b>Course Title</b>			
Additional courses may be eligible with the consent of the director of undergraduate studies.			
BIOI_SCI 338-0	Modeling Biological Dynamics	PHYSICS 352-0	Introduction to Computational Physics
ES_APPM 370-1	Introduction to Computational Neuroscience	PHYSICS 357-0	Optics Laboratory
ES_APPM 472-0	Introduction to the Analysis of RNA Sequencing Data	PHYSICS 360-0	Advanced Physics Laboratory
MATH 230-1	Multivariable Differential Calculus	PHYSICS 361-0	Classical Optics and Special Relativity
MATH 230-2	Multivariable Integral Calculus	PHYSICS 371-0	Nonlinear Dynamics and Chaos
MATH 240-0	Linear Algebra	STAT 210-0	Introduction to Probability and Statistics
MATH 250-0	Elementary Differential Equations	STAT 232-0	Applied Statistics
The four mathematics courses listed above have substantial overlap with the 281, 285, 290, and 291 mathematics series below. Consult the Math director of undergraduate studies for exact equivalencies.			
MATH 281-1	Accelerated Mathematics for ISP First Year	STAT 301-1 or STAT 303-1	Data Science 1 with R Data Science 1 with Python
MATH 281-2	Accelerated Mathematics for ISP First Year	STAT 301-2 or STAT 303-2	Data Science 2 with R Data Science 2 with Python
MATH 281-3	Accelerated Mathematics for ISP First Year	STAT 301-3 or STAT 303-3	Data Science 3 with R Data Science 3 with Python
MATH 285-1	Accelerated Mathematics for MMSS	STAT 302-0	Data Visualization
MATH 285-2	Accelerated Mathematics for MMSS	STAT 320-1	Statistical Theory & Methods 1
MATH 285-3	Accelerated Mathematics for MMSS	STAT 320-2	Statistical Theory & Methods 2
MATH 290-1	MENU: Linear Algebra and Multivariable Calculus	STAT 320-3	Statistical Theory & Methods 3
MATH 290-2	MENU: Linear Algebra and Multivariable Calculus	STAT 328-0	Causal Inference
MATH 290-3	MENU: Linear Algebra and Multivariable Calculus	STAT 344-0	Statistical Computing
MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus	STAT 348-0	Applied Multivariate Analysis
MATH 291-2	MENU: Intensive Linear Algebra and Multivariable Calculus	STAT 350-0	Regression Analysis
MATH 291-3	MENU: Intensive Linear Algebra and Multivariable Calculus	STAT 352-0	Nonparametric Statistical Methods
also		STAT 354-0	Time Series Modeling
MATH 310-1	Probability and Stochastic Processes	STAT 356-0	Hierarchical Linear Models
MATH 310-2	Probability and Stochastic Processes	STAT 383-0	Probability and Statistics for ISP
MATH 310-3	Probability and Stochastic Processes	<b>Human Behavior and Cognition (any 4 units, at least 2 of which must be 300-level or above)</b>	
MATH 311-1	MENU: Probability and Stochastic Processes	<b>Course Title</b>	
MATH 311-2	MENU: Probability and Stochastic Processes	300-level NEUROSCI courses listed under Neuroscience Group A Electives above are eligible if not being used as a Group A course.	
MATH 311-3	MENU: Probability and Stochastic Processes	This Allied Field is not available to students doing the major in psychology.	
MATH 325-0	Complex Analysis	COG_SCI 207-0	Introduction to Cognitive Modeling
MATH 334-0	Linear Algebra: Second Course	COG_SCI 211-0	Learning, Representation & Reasoning
MATH 351-0	Fourier Analysis and Boundary Value Problems	PSYCH 205-0	Research Methods in Psychology
MATH 353-0	Qualitative Theory of Differential Equations	PSYCH 303-0	Psychopathology
MATH 354-0	Chaotic Dynamical Systems	PSYCH 324-0	Perception
MATH 360-1	MENU: Applied Analysis	PSYCH 330-0	Special Topics in Cognition/Neuroscience
MATH 360-2	MENU: Applied Analysis	PSYCH 370-0	Cognitive Development
MATH 368-0	Introduction to Optimization	PSYCH 372-0	Language and Cognition
MATH 381-0	Fourier Analysis and Boundary Value Problems for ISP	PSYCH 374-0	Human Memory
MATH 382-0	Complex Analysis for ISP	PSYCH 390-0	Advanced Seminar in Personality, Clinical, or Social Psychology
NEUROSCI 390-0	Topics in Neuroscience (When taught with topic: "Brain function through the lens of computation")	PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience (any section)
PHYSICS 330-1	Classical Mech	PSYCH 392-0	Advanced Seminar in Psychology (With the approval of the director of undergraduate studies)
PHYSICS 330-2	Classical Mechanics	<b>Language and Human Communication (any 4 units, at least 2 of which must be 300-level or above)</b>	
PHYSICS 332-0	Statistical Mechanics	<b>Course Title</b>	
PHYSICS 337-0	Physics of Condensed Matter	CSD 202-0	Neurobiology of Communication
PHYSICS 339-1	Quantum Mechanics	CSD 301-0	Anatomy and Physiology of the Vocal Mechanism
		CSD 302-0	Anatomy and Physiology of the Peripheral Hearing Mechanism
		CSD 303-0	Brain and Cognition

CSD 305-0	Phonetics
CSD 306-0	Psychoacoustics
CSD 310-0	Biological Foundations of Speech and Music
LING 250-0	Sound Patterns in Human Language
LING 260-0	Formal Analysis of Words & Sentences
LING 270-0	Meaning
LING 315-0	Experimental Approaches to Word Form Processing
LING 316-0	Experimental Syntax
LING 317-0	Experimental Pragmatics
LING 321-0	Bilingualism
LING 330-0	Research Methods in Linguistics
LING 334-0	Introduction to Computational Linguistics
LING 350-0	Fundamentals of Laboratory Phonology
LING 360-0	Fundamentals of Syntax
LING 370-0	Fundamentals of Meaning
LING 371-0	Reference
LING 372-0	Pragmatics
LING 373-0	Implicature

### Laboratory Experience, choose one option below (units depend on option selected):

Two units of graded credit from NEUROSCI 398-0 or NEUROSCI 399-0 Undergraduate Research in a relevant field:

Course	Title
NEUROSCI 399-0	Independent Study in Neuroscience (multiple registrations)
NEUROSCI 398-0	Senior Thesis Seminar (With approval of the director of undergraduate studies)

Two units of Undergraduate Research (typically numbered 398 or 399) in another relevant field may satisfy this requirement with the approval of the director of undergraduate studies.

Two units of approved 398 or 399 Undergraduate Research may fulfill the laboratory experience requirement and at the same time replace one unit of credit in any Allied Field.

### One unit of 200-level or higher credit from laboratory or methods undergraduate coursework:

Course	Title
	Some courses on this list may double-count for an Allied Field or Neuroscience Elective.
BIOL_SCI 232-0	Molecular and Cellular Processes Laboratory (0.34 units)
BIOL_SCI 233-0	Genetics and Molecular Processes Laboratory (0.34 units)
BIOL_SCI 234-0	Investigative Laboratory (0.34 units)
CHEM 220-0	Introductory Instrumental Analysis
CHEM 235-1	Organic Chemistry Lab I (0.34 units)
CHEM 235-2	Organic Chemistry Lab II (0.34 units)
CHEM 235-3	Organic Chemistry Lab III (0.34 units)
CHEM 237-1	Accelerated Organic Chemistry Laboratory I
CHEM 237-2	Accelerated Organic Chemistry Laboratory II
LING 330-0	Research Methods in Linguistics
NEUROSCI 350-0	Advanced Neurophysiology Laboratory
NEUROSCI 355-0	Neurogenetics of Behavior Laboratory
NEUROSCI 357-0	Neuroanatomy Laboratory
NEUROSCI 390-0	Topics in Neuroscience (Sections designated as a Laboratory)

PSYCH 205-0	Research Methods in Psychology
Other courses with the approval of the director of undergraduate studies.	

### Related Courses Required for the Major in Neuroscience:

#### 1 Biology course:

Course	Title
BIOL_SCI 201-0	Molecular Biology

#### Calculus sequence chosen from:

Course	Title
MATH 220-1	Single-Variable Differential Calculus
MATH 220-2	Single-Variable Integral Calculus
or	
MATH 218-1	Single-Variable Calculus with Precalculus
MATH 218-2	Single-Variable Calculus with Precalculus
MATH 218-3	Single-Variable Calculus with Precalculus

Other with approval of the director of undergraduate studies

#### Chemistry sequence chosen from:

Course	Title
CHEM 110-0	Quantitative Problem Solving in Chemistry
CHEM 131-0	Fundamentals of Chemistry I
CHEM 141-0	Fundamentals of Chemistry Laboratory I (0.34 units)
CHEM 132-0	Fundamentals of Chemistry II
CHEM 142-0	Fundamentals of Chemistry Laboratory II (0.34 units)
or	
CHEM 151-0	General Chemistry I
CHEM 161-0	General Chemistry Laboratory I (0.34 units)
CHEM 152-0	General Chemistry II
CHEM 162-0	General Chemistry Laboratory II (0.34 units)
or	
CHEM 171-0	Advanced General Inorganic Chemistry
CHEM 181-0	Advanced General Inorganic Chemistry Laboratory (0.34 units)
CHEM 172-0	Advanced General Physical Chemistry
CHEM 182-0	Advanced General Physical Chemistry Laboratory (0.34 units)

#### 1 Computer Programming course chosen from:

Course	Title
BIOINFO_SCI 323-0	Bioinformatics: Sequence and Structure Analysis
COMP_SCI 110-0	Introduction to Computer Programming
COMP_SCI 111-0	Fundamentals of Computer Programming
ES_APPM 370-1	Introduction to Computational Neuroscience
ES_APPM 375-1	Quantitative Biology I: Experiments, Data, Models, and Analysis

ES\_APPM 375-1 may be used to fulfill either the Statistics or the Computer Programming requirement, but not both.

Other courses with the approval of the director of undergraduate studies.

#### Physics sequence chosen from:

Course	Title
PHYSICS 130-1	College Physics
PHYSICS 136-1	General Physics Laboratory (0.34 units)
PHYSICS 130-2	College Physics
PHYSICS 136-2	General Physics Laboratory (0.34 units)
PHYSICS 130-3	College Physics
PHYSICS 136-3	General Physics Laboratory (0.34 units)

or

PHYSICS 135-1	General Physics
PHYSICS 136-1	General Physics Laboratory (0.34 units)
PHYSICS 135-2	General Physics
PHYSICS 136-2	General Physics Laboratory (0.34 units)
PHYSICS 135-3	General Physics
PHYSICS 136-3	General Physics Laboratory (0.34 units)
or	
PHYSICS 140-1	Fundamentals of Physics
PHYSICS 136-1	General Physics Laboratory (0.34 units)
PHYSICS 140-2	Fundamentals of Physics
PHYSICS 136-2	General Physics Laboratory (0.34 units)
PHYSICS 140-3	Fundamentals of Physics
PHYSICS 136-3	General Physics Laboratory (0.34 units)
or for ISP students	
PHYSICS 125-1	General Physics ISP
PHYSICS 126-1	Physics Laboratory for ISP (0.34 units)
PHYSICS 125-2	General Physics for ISP
PHYSICS 126-2	Physics Laboratory for ISP (0.34 units)
PHYSICS 125-3	General Physics for ISP
PHYSICS 126-3	Physics Laboratory for ISP (0.34 units)

**1 Statistics course chosen from:**

Course	Title
BIOL SCI 337-0	Biostatistics
BMD_ENG 220-0	Introduction to Biomedical Statistics
CSD 304-0	Statistics in Communication Sciences and Disorders
ES_APPM 375-1	Quantitative Biology I: Experiments, Data, Models, and Analysis
ES_APPM 375-1	ES_APPM 375-1 may be used to fulfill either the Statistics or the Computer Programming requirement, but not both.
IEMS 201-0	Introduction to Statistics
PSYCH 201-0	Statistical Methods in Psychology
STAT 202-0	Introduction to Statistics and Data Science
STAT 210-0	Introduction to Probability and Statistics
STAT 383-0	Probability and Statistics for ISP

Other courses with the approval of the director of undergraduate studies.

## Honors in Neuroscience

Majors with strong academic records and significant research accomplishments may pursue honors in neuroscience. Interested students should contact the director of undergraduate studies by email no later than the beginning of fall quarter senior year. Considerations for honors include GPA and the quality of a written thesis based on the student's research. Students also must complete at least 1 quarter of NEUROSCI 399-0 Independent Study in Neuroscience and NEUROSCI 398-0 Senior Thesis Seminar in winter of senior year. Students meeting department requirements may be recommended to the college for graduation with honors. For more information consult the department website (<https://www.neurobiology.northwestern.edu/undergraduate/honors-in-the-major/>) and see Honors in the Major (p. 222).

## Neuroscience Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The Integrated Science Program is a highly selective BA program in Weinberg College. It is possible to complete a double major in ISP and Neuroscience with an Allied Field of Computation and Systems Modeling by completing the courses below in addition to ISP requirements. Note that NEUROSCI 311-0 in ISP is required to be completed by students doing the second major in neuroscience; students completing both majors may **not** substitute INTG\_SCI 398-0 or another course for a neuroscience course in the ISP curriculum. ISP students should take NEUROSCI 311-0 in their sophomore or junior year.

Course	Title
<b>Required course:</b>	
NEUROSCI 206-0	Systems and Behavioral Neuroscience
<b>2 Neuroscience Electives with a primary focus on human behavior and the human brain (Group A Elective), chosen from:</b>	
COG_SCI 210-0	Language and the Brain
CSD 303-0 or PSYCH 327-0	Brain and Cognition
CSD 310-0	Biological Foundations of Speech and Music
PSYCH 110-0	Introduction to Psychology
PSYCH 228-0	Cognitive Psychology
PSYCH 244-0	Developmental Psychology
PSYCH 248-0	Health Psychology
PSYCH 324-0	Perception
PSYCH 328-0	Brain Damage and the Mind
PSYCH 330-0	Special Topics in Cognition/Neuroscience <sup>1</sup>
PSYCH 336-0	Consciousness
PSYCH 378-0	Images of Cognition
PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience <sup>2</sup>
PSYCH 392-0	Advanced Seminar in Psychology <sup>3</sup>
<b>2 Neuroscience Electives with a primary focus on molecular, cellular, and systems-level mechanisms of brain function (Group B Elective), chosen from:</b>	
NEUROSCI 303-0	Molecular Mechanisms of Neuropsychopharmacology
NEUROSCI 304-0	Developmental Neurobiology
NEUROSCI 308-0	Genetics of Human Behavior
NEUROSCI 320-0	Animal Behavior
NEUROSCI 324-0	Neurobiology of Biological Clocks and Sleep
NEUROSCI 325-0	Neurobiology of Stress, Adversity, and Resilience
NEUROSCI 326-0	Neurobiology of Learning and Memory
NEUROSCI 350-0	Advanced Neurophysiology Laboratory
NEUROSCI 355-0	Neurogenetics of Behavior Laboratory
NEUROSCI 357-0	Neuroanatomy Laboratory
NEUROSCI 360-0	Neuroscience of Brain Disorders
NEUROSCI 365-0	Neurobiology of Prediction
NEUROSCI 370-0	Genetic and Circuit Analysis of Motivated Behavior
NEUROSCI 377-0	Neurobiology of Sensation and Perception
NEUROSCI 390-0	Topics in Neuroscience
BIOL SCI 303-0	Molecular Neurobiology
BIOL SCI 307-0	Brain Structure, Function, and Evolution
ES_APPM 370-1	Introduction to Computational Neuroscience

<sup>1</sup> PSYCH 330-0 when class topic is "Brain and Language."

- <sup>2</sup> PSYCH 391-0 when class topic is, "Left Brain, Right Brain," "Creative Problem Solving," or "Language and the Mind." For other topics, a syllabus may be provided to the DUS for consideration.
- <sup>3</sup> PSYCH 392-0 when class topic is "Psychoneuroimmunology," or "Emotional Brain." For other topics a syllabus may be provided to the DUS for consideration

## Honors in Neuroscience

Majors with strong academic records and significant research accomplishments may pursue honors in neuroscience. Interested students should contact the director of undergraduate studies by email no later than the beginning of fall quarter senior year. Considerations for honors include GPA and the quality of a written thesis based on the student's research. Students also must complete at least 1 quarter of NEUROSCI 399-0 Independent Study in Neuroscience and NEUROSCI 398-0 Senior Thesis Seminar in winter of senior year. Students meeting department requirements may be recommended to the college for graduation with honors. For more information consult the department website (<https://www.neurobiology.northwestern.edu/undergraduate/honors-in-the-major/>) and see Honors in the Major (p. 222).

## Neuroscience

The Neuroscience Major (p. 380) is offered by the Department of Neurobiology (p. 378).

## Persian

See Middle East and North African Languages (p. 373).

## Perspectives on Power, Justice, and Equity

The two-part transdisciplinary overlay aims to infuse the Weinberg College curriculum with active discussions about how to navigate the local-global continuum amidst the complex and highly dynamic social and political movements of today and in the past. In particular, these overlays ask students to reflect on their own perspective as necessarily the product of interconnected webs of people, ideas, and events.

## U.S. Perspectives on Power, Justice, and Equity

This perspective addresses the impact of histories, institutions, and/or social structures on groups and on individuals primarily in the United States, focusing on the interconnected issues of racism/antiracism, equality/inequality, and justice/injustice.

### Learning Objectives for U.S. Perspectives

In courses satisfying this perspective students will:

- Engage with scholarship describing the historical and contemporary structures, processes, human-environment relationships, and practices that shape racism and anti-racism; power and resistance; justice and injustice; equality and inequality; agency and subjection; belonging and subjection, with a primary, but not exclusive, focus on the United States
- Explore the social, political, environmental, and cultural bases of these relationships, structures, processes, and practices, and examine how they constitute individuals' groups

- Reflect on one's position within these structures, processes, and practices
- Acquire the knowledge and develop the skills necessary to work with key analytical concepts that often define individuals and groups, including but not limited to ability, age, education, environmentality, ethnicity, gender, indigeneity, language, nationality, race, religion, politics, sexuality, and social status
- Analyze how these and other terms intersect and overlap, with attention to the dynamism and variety of experiences and expressions

## U.S. Perspectives Courses

Courses approved for the 2024-2025 academic year.

Course	Title
ANTHRO 221-0	Social and Health Inequalities
ANTHRO 235-0	Language in Asian America
ANTHRO 382-0	Political Ecology
ASIAN_AM 235-0	Language in Asian America
ASIAN_AM 247-0	Asian Americans and Popular Culture
ASIAN_AM 251-0	Introduction to Critical Mixed Race Studies
ASIAN_AM 275-0	Introduction to Asian American Literature
ASIAN_AM 276-0	Topics in Literary and Cultural Studies
BLK_ST 210-0	Introduction to African American Literature
BLK_ST 212-1	Introduction to African-American History: Key concepts from 1700-1861
BLK_ST 212-2	Introduction to African American History: Emancipation to Civil Rights Movement
BLK_ST 214-0	Comparative Race and Ethnic Studies
BLK_ST 215-0	Introduction to Black Social & Political Life
BLK_ST 220-0	Civil Rights and Black Liberation
BLK_ST 236-0	Introduction to Black Studies
BLK_ST 247-0	Black Life. Trans Life.
BLK_ST 251-0	Introduction to Critical Mixed Race Studies
BLK_ST 262-0	Introduction to Black Religions: The North American Experience
BLK_ST 317-0	Black Political Thought
BLK_ST 320-0	Social Meaning of Race
BLK_ST 325-0	Education for Black Liberation
BLK_ST 334-0	Gender and Black Masculinity
BLK_ST 350-0	Theorizing Blackness
BLK_ST 360-0	Major Authors
BLK_ST 365-0	Black Chicago
ENGLISH 266-0	Introduction to African American Literature
ENGLISH 267-0	Topics in African American Literature
ENGLISH 274-0	Introduction to Native American and Indigenous Literatures
ENGLISH 275-0	Introduction to Asian American Literature
ENGLISH 276-0	Topics in Asian American Literature
ENGLISH 277-0	Introduction to Latinx Literature
ENGLISH 280-0	Topics in Multiethnic Literature
ENGLISH 366-0	Studies in African American Literature
ENGLISH 374-0	Studies in Native American and Indigenous Literatures
ENGLISH 375-0	Studies in Asian American Literature
ENGLISH 377-0	Topics in Latinx Literature
ENGLISH 380-0	Studies in Multiethnic American Literature
ENVR_POL 212-0	Environment and Society

ENVR_POL 309-0	American Environmental History	LEGAL_ST 350-0	Psychology and the Law
ENVR_POL 339-0	Silent but Loud: Negotiating Health in a Cultural, Food, Poverty, Environ. Caste	LEGAL_ST 383-0	Gender, Sexuality and The Carceral State
ENVR_POL 384-0	Political Ecology	LING 220-0	Language and Society
GBL_HLTH 221-0	Beyond Porn: Sexuality, Health and Pleasure	LING 312-0	Experimental Sociolinguistics
GBL_HLTH 303-0	(Re)mixing Qualitative Methods	LING 320-0	Sociolinguistics
GBL_HLTH 317-0	Native American Health Research & Prevention	PERF_ST 225-0	Black Music Studies
GBL_HLTH 318-0	Community-based Participatory Research Course	PHIL 224-0	Philosophy, Race, and Racism
GBL_HLTH 326-0	Native Nations, Healthcare Systems, & U.S. Policy	PHIL 262-0	Ethical Problems and Public Issues
GBL_HLTH 339-0	Silent but Loud: Negotiating Health in a Cultural, Food, Poverty, Environ. Caste	POLI_SCI 220-0	American Government and Politics
GNDR_ST 221-0	Beyond Porn: Sexuality, Health and Pleasure	POLI_SCI 230-0	Introduction to Law in the Political Arena
GNDR_ST 230-0	Traditions in Feminist Thought	POLI_SCI 307-0	Deportation Law and Politics
GNDR_ST 235-0	Beyond the Binary	POLI_SCI 321-0	Urban Politics
GNDR_ST 260-0	Critical Fat Studies	POLI_SCI 326-0	Race and Public Policy
GNDR_ST 324-0	US Gay and Lesbian History	POLI_SCI 327-0	African American Politics
GNDR_ST 340-0	Gender, Sexuality, and the Law	POLI_SCI 333-0	Constitutional Law II: Civil and Political Rights
GNDR_ST 381-0	Queer Theory	POLI_SCI 334-0	Latino Politics
HISTORY 210-1	North America and the United States to 1865	POLI_SCI 336-0	Immigration Politics and Policy
HISTORY 210-2	History of the United States, Reconstruction to the Present	POLI_SCI 338-0	Labor Politics in America
HISTORY 211-0	American Wars	POLI_SCI 382-0	Religion, Law, & Politics: Politics of Religious Diversity
HISTORY 212-1	Introduction to African-American History: Key concepts from 1700-1861	PSYCH 340-0	Psychology and Law
HISTORY 212-2	Introduction to African American History: Emancipation to Civil Rights Movement	RELIGION 262-0	Introduction to Black Religions: The North American Experience
HISTORY 215-0	History of the American Family	RELIGION 314-0	Buddhism in the Contemporary World
HISTORY 219-0	History of the Present	RELIGION 382-0	Religion, Law, & Politics: Politics of Religious Diversity
HISTORY 221-0	Famous American Trials	SOCIAL 206-0	Law and Society
HISTORY 305-0	American Immigration	SOCIAL 208-0	Race and Society
HISTORY 309-0	American Environmental History	SOCIAL 210-0	Families and Societies
HISTORY 310-1	Early American History: Contact and Colonization	SOCIAL 212-0	Environment and Society
HISTORY 315-3	The United States Since 1900: Late 20th C. to Present	SOCIAL 216-0	Gender and Society
HISTORY 317-1	American Cultural History: 19th C.	SOCIAL 218-0	Education and Inequality: Focus on Chicago
HISTORY 318-1	Legal and Constitutional History of the United States: Colonial Period to 1850	SOCIAL 220-0	Health, Biomedicine, Culture, and Society
HISTORY 318-2	Legal and Constitutional History of the United States: 1850 to Present	SOCIAL 223-0	Masculinities and Society
HISTORY 319-0	US Foreign Relations	SOCIAL 235-0	Critical Thought on Race and Ethnicity
HISTORY 324-0	US Gay and Lesbian History	SOCIAL 307-0	School and Society
HISTORY 327-0	Histories of Violence in the United States	SOCIAL 310-0	Sociology of the Family
HUM 220-0	Health, Biomedicine, Culture, and Society	SOCIAL 318-0	Sociology of Law
LATINO 230-0	Grrrls Our Mothers Warned Us About: Introduction to Latine Feminist Sexualities	SOCIAL 320-0	Gender, Health, and Medicine
LATINO 232-0	Queer and Trans Latino Studies	SOCIAL 327-0	Youth and Society
LATINO 277-0	Introduction to Latinx Literature	SOCIAL 348-0	Race, Politics, and the Law
LEGAL_ST 206-0	Law and Society	SOCIAL 356-0	Sociology of Gender
LEGAL_ST 221-0	Famous American Trials	SPANISH 200-0	Advanced Spanish for Heritage Language Learners
LEGAL_ST 305-0	American Immigration	SPANISH 277-0	Introduction to Latinx Literature
LEGAL_ST 308-0	Sociology of Law		
LEGAL_ST 318-1	Legal and Constitutional History of the United States: Colonial Period to 1850		
LEGAL_ST 318-2	Legal and Constitutional History of the United States: Since 1850		
LEGAL_ST 333-0	Constitutional Law II: Civil and Political Rights		
LEGAL_ST 340-0	Gender, Sexuality, and the Law		
LEGAL_ST 347-0	Comparative Race & Ethnicity		
LEGAL_ST 348-0	Race, Politics, and the Law		

## Global Perspectives on Power, Justice, and Equity

This perspective addresses the geographic and environmental conditions, historical and present social and political structures, linguistic and cultural formations of groups and individuals primarily outside the United States, focusing on the interaction among cultures.

### Learning Objectives for Global Perspectives

In courses satisfying this perspective students will:

- Engage with scholarship describing the historical and contemporary structures, processes, human-environment relationships, and practices that shape global intercultural relations among groups,

- cultural traditions, and/or nations, focusing primarily on those outside the United States
- Explore the social, political, environmental, and cultural bases of these groups, traditions, and/or nations, and how they constitute themselves and are constituted by others
  - Generate the knowledge and develop the skills necessary to grapple with key issues. The following list of possible issues is not intended to be exhaustive but illustrative: appropriation, art, borders, colonialism, diaspora, diplomacy, education, empire, the environment, ethnicity, exploration, health, indigeneity, immigration, migration, nationality, refugees, cultural reception, sustainability, statelessness, travel, and war
  - Analyze how these and other terms intersect and overlap, with attention to the dynamism and variety of experiences and expressions

## Global Perspectives Courses

Courses approved for the 2024-2025 academic year.

Course	Title	
ANTHRO 211-0	Culture & Society	ENVR_POL 340-0 Global Environments and World History
ANTHRO 215-0	The Study of Culture through Language	ENVR_POL 383-0 Environmental Anthropology
ANTHRO 238-0	Food in Culture & Society	ENVR_POL 385-0 Archaeologies of Sustainability and Collapse
ANTHRO 326-0	Archaeologies of Sustainability and Collapse	FRENCH 211-0 Reading Cultures in French
ANTHRO 329-0	Archaeology and Nationalism	FRENCH 271-0 Introducing the Novel
ANTHRO 383-0	Environmental Anthropology	FRENCH 355-0 Topics in Modern and Contemporary French Literature and Culture
ART_HIST 220-0	Introduction to African Art	FRENCH 365-0 The Maghreb and the Middle East
ART_HIST 222-0	Black Art in the TransAtlantic World	FRENCH 386-0 Gender & Writing
ART_HIST 232-0	Introduction to the History of Architecture: 1400 to Present	FRENCH 395-0 Advanced Studies in Culture and Thought
ART_HIST 235-0	Introduction to Latin American Art	GBL_HLTH 201-0 Introduction to Global Health
ART_HIST 240-0	Introduction to Asian Art	GBL_HLTH 302-0 Global Bioethics
ART_HIST 255-0	Introduction to Modernism	GBL_HLTH 306-0 Biomedicine and Culture
ART_HIST 340-1	Baroque Art: Italy & Spain 1600–1800	GBL_HLTH 309-0 Biomedicine and World History
ART_HIST 342-0	Eighteenth-Century European Art	GBL_HLTH 321-0 War and Public Health
ART_HIST 350-1	19th-Century Art 1: 1789–1848	GBL_HLTH 323-0 Global Health from Policy to Practice
ART_HIST 350-2	19th-Century Art 2: 1848–1914	GBL_HLTH 324-0 Volunteerism and the Ethics of Help
ART_HIST 360-0	20th Century Art	GBL_HLTH 325-0 History of Reproductive Health
ART_HIST 386-0	Art of Africa	GBL_HLTH 337-0 Hazard, Disaster and Society
ASIAN_LC 300-0	Advanced Topics in Chinese Literature and Culture	GBL_HLTH 338-0 Environmental Justice
ASIAN_LC 375-0	South Asian Societies	GERMAN 224-0 Contemporary Germany
ASIAN_LC 390-0	Advanced Topics in Asian Languages and Cultures	GERMAN 224-SA Contemporary Germany
ASIAN_LC 392-0	Advanced Studies in Asian Film, Media, and Visual Culture	GERMAN 234-1 Jews and Germans: An Intercultural History I
ASIAN_LC 393-0	Asian Environmental Humanities	GERMAN 234-2 Jews and Germans: An Intercultural History II
BLK_ST 213-0	History of the Black World	GERMAN 248-0 Migration in the German Past and Present: Gastarbeiter, Refugees, Displaced Persons
BLK_ST 275-0	Africans and African Americans: Cultural Entanglements	GERMAN 303-0 Advanced Expression in German speaking
COMP_LIT 207-0	Introduction to Critical Theory	GERMAN 328-0 Prague: City of Cultures, City of Conflict
ENGLISH 265-0	Introduction to Postcolonial Literature	GERMAN 335-0 Minority Voices in Germany
ENGLISH 281-0	Topics in Postcolonial & Comparative Literatures	GERMAN 337-0 Science and Culture in Germany
ENGLISH 287-0	Topics in Global Literatures	GERMAN 349-0 The History of the Holocaust
ENGLISH 365-0	Studies in Postcolonial Literature	GNDR_ST 233-0 Gender, Politics, and Philosophy
ENGLISH 369-0	Studies in African Literature	GNDR_ST 341-0 Transnational Perspectives on Gender and Sexuality
ENVR_POL 251-0	The Politics of Disaster: A Global Environmental History	HISTORY 201-1 Europe in the Medieval and Early Modern World
ENVR_POL 337-0	Hazard, Disaster and Society	HISTORY 201-2 Europe in the Modern World
ENVR_POL 338-0	Environmental Justice	HISTORY 203-1 Jewish History I: 750-1492
		HISTORY 220-0 History of the Future
		HISTORY 248-0 Global Legal History
		HISTORY 249-0 The End of Citizenship
		HISTORY 250-1 Global History: Early Modern to Modern Transition
		HISTORY 250-2 Global History: The Modern World
		HISTORY 251-0 The Politics of Disaster: A Global Environmental History
		HISTORY 253-0 A Global History of Prisons and Camps
		HISTORY 254-0 Entrepreneurship: A Global History
		HISTORY 255-1 African Civilizations
		HISTORY 255-3 Modern Africa
		HISTORY 260-2 History of Modern Latin America
		HISTORY 275-1 History of Early Modern Science and Medicine
		HISTORY 275-2 History of Modern Science and Medicine
		HISTORY 284-2 Early Modern Japan
		HISTORY 286-0 World War II in Asia
		HISTORY 340-0 Gender, War, and Revolution in the 20th Century
		HISTORY 349-0 The History of the Holocaust
		HISTORY 351-0 Europe in the Age of Total War
		HISTORY 352-0 A Global History of Death and Dying
		HISTORY 353-0 History of Capitalism, 1500-1850

HISTORY 354-0	History of Socialism	RELIGION 312-0	Buddhism and Gender
HISTORY 366-0	Latin America in the Independence Era: American Indians and Nations	RELIGION 351-0	Islamic Law
HISTORY 367-0	History of Mexico	RELIGION 360-0	Black Religions
HISTORY 370-0	Music and Nation in Latin America	SLAVIC 218-0	Introduction to Polish Literature
HISTORY 376-0	Global Environments and World History	SLAVIC 250-SA	Balkan Civilizations
HISTORY 379-0	Biomedicine and World History	SLAVIC 318-0	Polish Cinema
HISTORY 381-1	Qing China	SLAVIC 328-0	Prague: City of Cultures, City of Conflict
HISTORY 381-2	Modern China: The Twentieth Century	SOCIOl 305-0	Population Dynamics
HISTORY 381-3	Modern China: Post-Mao Reforms, 1978-2016	SOCIOl 317-0	Global Development
HISTORY 382-0	The Modern Japanese City	SPANISH 204-0	Advanced Spanish II: Activism in Times of Political Change
HISTORY 385-1	History of Modern South Asia, 1500-1800	SPANISH 223-0	Cervantes (Taught in English)
HISTORY 385-2	History of Modern South Asia, ca. 1750-present	SPANISH 231-0	The "New" Latin American Narrative (Taught in English)
HISTORY 386-2	Southeast Asia in the Age of Empire	SPANISH 260-0	Literature in Latin America before 1888
HISTORY 386-3	Southeast Asia: Decolonization & Independence	SPANISH 261-0	Literature in Latin America since 1888
HUM 329-0	Archaeology and Nationalism	SPANISH 340-0	Colonial Latin American Literature
INTL_ST 383-1	Elliott Scholars Program: Foundation Topics in Global Affairs	SPANISH 346-0	Testimonial Narrative in Latin America
INTL_ST 393-SA	Development in the Global Context: Participation, Power, and Social Change	SPANISH 349-0	Critical Thought in Latin Amer
ISEN 230-0	Climate Change and Sustainability: Ethical Dimensions	SPANISH 350-0	Visual Culture in Latina/o America and Spain
ISEN 375-0	Issues in Environmental Philosophy	SPANISH 362-0	Citizenship and Urban Violence in Latin America
ITALIAN 251-0	Introduction to Italian Cinema		
ITALIAN 277-0	Global Neorealism		
ITALIAN 377-0	Gender and Sexuality in Italian Culture		
LEGAL_ST 248-0	Global Legal History		
LEGAL_ST 356-0	Constitutional Challenges in Comparative Perspective		
MENA 200-0	Making the Modern Middle East: Culture, Politics, History		
PERF_ST 308-0	Contemporary Middle Eastern Performance		
PHIL 220-0	Introduction to Critical Theory		
PHIL 221-0	Gender, Politics, & Philosophy		
PHIL 222-0	Introduction to Africana Philosophy		
PHIL 275-0	Climate Change and Sustainability: Ethical Dimensions		
PHIL 375-0	Issues in Environmental Philosophy		
POLI_SCI 240-0	Introduction to International Relations		
POLI_SCI 250-0	Introduction to Comparative Politics		
POLI_SCI 304-0	Human Rights Between East and West		
POLI_SCI 341-0	International Political Economy		
POLI_SCI 343-0	Politics of International Law		
POLI_SCI 347-0	Ethics in International Relations		
POLI_SCI 350-0	Social Movements		
POLI_SCI 351-0	Politics of the Middle East		
POLI_SCI 352-0	Global Development		
POLI_SCI 354-0	Politics of Southeast Asia		
POLI_SCI 356-0	Constitutional Challenges in Comparative Perspective		
POLI_SCI 359-0	Politics of Africa		
POLI_SCI 362-0	Politics of Europe		
POLI_SCI 374-0	Politics of Capitalism		
POLI_SCI 376-0	Civil Wars		
POLI_SCI 377-0	Drugs and Politics		
POLI_SCI 383-0	War and Change in International Politics		
POLI_SCI 384-0	International Responses to Mass Atrocities		
PORT 380-0	Contemporary Brazil: Literature and Film		
PSYCH 317-0	The Holocaust: Psychological Themes & Perspectives		
RELIGION 295-0	Ahimsa: Nonviolence in South Asia and Beyond		

## Philosophy

[philosophy.northwestern.edu](http://philosophy.northwestern.edu)

The Department of Philosophy is committed to exposing students to a broad range of philosophical traditions and issues. With strengths in Anglo-American and continental philosophy, the department provides courses in all systematic areas of philosophy as well as a strong array of courses in ancient, medieval, and modern philosophy. The research interests of members of the department show a similar breadth, and many of them invite interdisciplinary pursuits with relevant scientific or other humanistic disciplines. This pluralism enables students to explore philosophy's application to all areas of life and to appreciate the diversity of approaches possible in philosophy.

## Programs of Study

- Philosophy Major (p. 391)
- Philosophy Minor (p. 392)

**PHIL 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PHIL 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PHIL 110-0 Introduction to Philosophy (1 Unit)** Fundamental problems and methods of philosophy. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 150-0 Elementary Logic I (1 Unit)** Introduction to the philosophical study of logical entailment and deduction. Systems of classical propositional and predicate logic; and their bearing on philosophical quandaries. First quarter of PHIL 150-0/PHIL 250-0/PHIL 350-0 sequence.

*Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**PHIL 151-0 Scientific Reasoning (1 Unit)** Introduction to probabilistic calculus and its role in science. Topics may include Bayes's theorem, the Dutch Book theorem, hypothesis and confirmation, problems of induction, subjective and objective interpretations of probability, causal reasoning. *Formal Studies Distro Area*

**PHIL 210-1 History of Philosophy - Ancient (1 Unit)** Classical readings from authors of the Western tradition of ancient philosophy, like Plato, Aristotle, Stoics, Epicureans, Cicero, Seneca. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 210-2 History of Philosophy - Medieval (1 Unit)** Classical readings from authors of the Western tradition of medieval philosophy. *Ethics Values Distro Area*

**PHIL 210-3 History of Philosophy - Early Modern (1 Unit)** Classical readings from authors of the Western tradition of the early modern age of enlightenment, like Hobbes, Locke, Spinoza, Leibniz, Hume. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 216-0 Introduction to Pragmatism (1 Unit)** Introduction to classical and contemporary literature in pragmatist philosophy: Peirce, James, Mead, Dewey, and 20th century neopragmatist authors (Quine, Rorty, Putnam, et al.). *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 219-0 Introduction to Existentialism (1 Unit)** Principal sources of existential philosophy: Kierkegaard, Jaspers, Marcel, Nietzsche, Sartre, Heidegger, Merleau-Ponty, and others. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 220-0 Introduction to Critical Theory (1 Unit)** Crisis, criticism, and critique in philosophical, political, and cultural contexts. Focus on the philosophical aspects of critical theory with reference to social conditions and art, literary, and/or political forms. COMP\_LIT 207-0 and PHIL 220-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**PHIL 221-0 Gender, Politics, & Philosophy (1 Unit)** Role of gender difference in the main political-philosophical traditions: social contract, liberalism, republicanism, socialism-Marxism, critical theory. The classics of feminist political philosophy (Wollstonecraft, Mill, Taylor, Engels), followed by contemporary debates. Taught with GNDR\_ST 233-0; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**PHIL 222-0 Introduction to Africana Philosophy (1 Unit)** Conceptual and historical approaches to philosophical questions, topics, and figures belonging to the African Diaspora including political thought, ethical thought, aesthetics, hermeneutics, philosophy of identity, and epistemologies. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**PHIL 224-0 Philosophy, Race, and Racism (1 Unit)** Introduction to philosophical discussions of race, race identity, and racism. Readings may be drawn from classical as well as contemporary sources. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area U.S. Perspectives on Power, Justice, and Equity*

**PHIL 225-0 Minds and Machines (1 Unit)** Introductory course addressing philosophical issues arising from the study of intelligence, including the possibility of machine intelligence and its relevance to the

study of human intelligence. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PHIL 240-0 Freedom and Responsibility (1 Unit)** Introduction to philosophy through an examination of major theories of freedom and responsibility, with attention to how these may be affected by the scientific worldview. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 250-0 Elementary Logic II (1 Unit)** Introduction to variations of classical logic, and their application to philosophical topics, among them necessity and possibility, obligation and permission, knowledge and truth. Second quarter of PHIL 150-0/PHIL 250-0/PHIL 350-0 sequence. Prerequisite: PHIL 150-0. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**PHIL 253-0 Introduction to the Philosophy of Language (1 Unit)** Contemporary themes and theories in the philosophy of language. Topics may include context and semantics, the semantics-pragmatics boundary, implicature, reference, presupposition, speech acts, and the role of language in shaping conceptions of social and natural reality. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PHIL 254-0 Introduction to Philosophy of the Natural Sciences (1 Unit)** Philosophical and methodological issues in the natural sciences, such as the discovery and testing of hypotheses, explanation, theory selection, the nature of scientific laws, causality, space and time, determinism. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 255-0 Theory of Knowledge (1 Unit)** Basic philosophical questions about human knowledge, focusing on skepticism and competing theories of knowledge. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 257-0 Philosophy of the Universe (1 Unit)** Methods for and approaches to philosophical inquiry about the ultimate nature of the universe. Topics include: emergence of the macroscopic world, laws of nature, the directionality of time, cosmological arguments for the existence of God, life, consciousness. No Prerequisites. *Ethics Values Distro Area*

**PHIL 259-0 Introduction to Metaphysics (1 Unit)** Introductory discussion of some debates in contemporary metaphysics. Possible topics include objectivity, time, universals, causations, possible worlds, and material constitution. *Ethics Values Distro Area*

**PHIL 260-0 Introduction to Moral Philosophy (1 Unit)** Overview of some of the main ideas and most influential writings of moral philosophy. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 261-0 Introduction to Political Philosophy (1 Unit)** Overview of some of the main ideas and most influential writings of political philosophy. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 262-0 Ethical Problems and Public Issues (1 Unit)** Analysis of such controversial issues as the death penalty, abortion, euthanasia, sexual morality, economic justice and welfare, pornography and censorship, discrimination and preferential treatment, the environment, and world hunger. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area U.S. Perspectives on Power, Justice, and Equity*

**PHIL 266-0 Philosophy of Religion (1 Unit)** Survey of the central issues in the philosophic analysis of religious experience and cultures: the existence of God or divine-like forces, creation, miracles, the claims of faith versus the claims of reason, sin, free will, immortality, revelation, harmony of the universe, community of humanity and universe. May be

repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 268-0 Ethics and the Environment (1 Unit)** Topics include our relationship to the environment, the obligation to future generations, pollution and population control, food and energy production and distribution, species diversity, and the preservation of wilderness. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 269-0 Bioethics (1 Unit)** Ethical analysis of a variety of issues such as the human genome project, genetic therapy, cloning and stem cell transplantation, human and animal research, reproductive technologies, and the allocation of resources. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 273-1 The Brady Scholars Program: The Moral Life (1 Unit)** Course asking questions that allow determining how we are to treat and interact with others. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 273-2 The Brady Scholars Program: The Good Life (1 Unit)** Course asking questions such as what it takes for a human life to go well, the nature of happiness, the role of pleasure, what makes lives meaningful, rich, flourishing, what human dignity consists in. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 273-3 The Brady Scholars Program: The Good Society (1 Unit)** Course investigating domestic and international questions, such as whether democracy is the most legitimate form of government, what obligations national states have to others, the role of peace, international inequality. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 275-0 Climate Change and Sustainability: Ethical Dimensions (1 Unit)** Interdisciplinary analysis of ethical issues concerning climate change; resource use, conservation practices, and sustainability. ISEN 230-0 is taught with PHIL 275-0; students may not earn credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**PHIL 280-0 Introduction to the Philosophy of Art (1 Unit)** Introduction to major themes and theories in the philosophy of art, including questions concerning the nature of taste, beauty, art, and artistic creativity. May also be taught as an introduction to the philosophy and theory of one or several of the arts, e.g. philosophy of film, philosophy of figurative art, etc. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PHIL 310-0 Studies in Ancient Philosophy (1 Unit)**

Works of one or more important philosophers or movements before 500 CE. May be repeated for credit with change of topic.

**PHIL 311-0 Studies in Medieval Philosophy (1 Unit)**

Works of one or more important philosophers or philosophical movements between 500 and 1500 CE. May be repeated for credit with change of topic.

**PHIL 312-0 Studies in Modern Philosophy (1 Unit)**

Works of one or more important philosophers or philosophical movements between 1500 and 1800. May be repeated for credit with change of topic.

**PHIL 313-1 Kant's 'Critique of Pure Reason' I (1 Unit)**

Detailed analysis of Kant's claims to justify human knowledge in The Critique of Pure Reason (the 'Analytic of Pure Reason').

**PHIL 313-2 Kant's 'Critique of Pure Reason' II (1 Unit)**

Detailed analysis of Kant's criticism of traditional metaphysics in The Critique of Pure Reason (the 'Dialectic of Pure Reason').

**PHIL 314-0 Studies in German Philosophy (1 Unit)**

Study of one or more key themes, figures, or historical developments in German philosophy from the 18th century to the present. May be repeated for credit with change of topic.

**PHIL 315-0 Studies in French Philosophy (1 Unit)**

One or more figures of 20th century or contemporary French philosophy, such as Michel Foucault, Simone de Beauvoir, Frantz Fanon. May include perspectives from feminist, anti-racist, decolonial and/or queer theory. May be repeated for credit with change of topic.

**PHIL 317-0 Studies in 19th and 20th Century Philosophy (1 Unit)**

Study of one or more key philosophical themes, figures, or developments of the 19th century, 20th century, or both. May be repeated for credit with change of topic.

**PHIL 318-0 Studies in Contemporary Philosophy (1 Unit)**

Selected philosophical works of the latter part of the 20th century or the 21st century. May be repeated for credit with change of topic.

**PHIL 319-0 Existentialism and Its Sources (1 Unit)**

Intensive study of one or a small number of major contributions to the existentialist tradition. May be repeated for credit with change of topic.

**PHIL 321-0 Philosophy & Gender (1 Unit)**

Survey of approaches to sex and gender throughout the history of philosophy. May be repeated for credit with change of topic.

**PHIL 324-0 Studies in African American Philosophy (1 Unit)**

Study of the work of one or more important African American philosophers or philosophical movements of the 19th or 20th centuries. May be repeated for credit with change of topic.

**PHIL 325-0 Philosophy of Mind (1 Unit)**

Selected topics in the philosophy of mind: mind-body problem, problem of other minds, self-knowledge, personal identity, philosophical psychology. May be repeated for credit with change of topic.

**PHIL 326-0 Topics in Philosophy of Medicine (1 Unit)**

Introduces premed students to reasoning through problems they are likely to encounter. For example: Is it ever ethical to withhold information from a patient? Should physicians help terminally ill patients commit suicide? Should health care for the elderly be more limited than for children? How does uncertainty and risk bear on medical decisions? *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**PHIL 327-0 Philosophy of Psychology (1 Unit)**

Problems such as the nature of psychological explanation, experimentation and the testing of psychological claims, the standing of psychology as a science, reductionism, the unconscious, and conceptualizing the psyche and its processes. May be repeated for credit with change of topic.

**PHIL 328-0 Classics of Analytic Philosophy (1 Unit)**

Examination of classic texts that shaped the analytic movement of 20th century Anglo-American philosophy. Readings from Frege, Russell, Wittgenstein, Carnap, Quine, and others.

**PHIL 330-0 Practical Reasoning and Choice (1 Unit)**

Theory of decision making, what it is to decide, possible constraints on decisions, how to understand preference reversals, paradoxes of decision making, and actions taken against one's better judgment.

**PHIL 350-0 Advanced Logic (1 Unit)**

Alternating topics. Metalogic: Formal semantics, soundness, completeness, and compactness of predicate logic; Nonstandard models of arithmetic and the Lowenheim-Skolem theorems. Incompleteness: Recursive functions, the incompleteness of arithmetic and undecidability of predicate logic. Definability and undefinability of provability,

consistency, and truth in arithmetic. Third quarter of PHIL 150-0/PHIL 250-0/PHIL 350-0 sequence.  
Prerequisite: PHIL 150-0.

#### **PHIL 351-0 Advanced Topics in Philosophical Logic (1 Unit)**

Advanced application of methods of modern formal logic to a variety of questions in metaphysics, philosophy of logic, philosophy of language, and philosophy of mathematics.

Prerequisite: PHIL 250-0.

#### **PHIL 352-0 Philosophy of Mathematics (1 Unit)**

Nature of mathematical entities and mathematical truth. Platonism, intuitionism, fictionalism, nominalism, the synthetic a priori, self-referential paradoxes, incompleteness and undecidability, consistency, alternative axiomatizations and uniqueness, the relation between mathematics and logic, and mathematical revolutions.

#### **PHIL 353-0 Philosophy of Language (1 Unit)**

The nature and uses of language as presenting philosophical problems, e.g., theory of reference, the modes of meaning, definition, metaphor, problems of syntax, and semantics. May be repeated for credit with change of topic.

#### **PHIL 355-0 Scientific Method in the Social Sciences (1 Unit)**

Analysis of the philosophical foundations of social inquiry with reference to selected problems, thinkers, and schools, both classical and modern.

#### **PHIL 357-0 Topics in Metaphysics and Epistemology (1 Unit)**

Examination of current debates in metaphysics and epistemology, broadly understood. Possible topics include skepticism, mental representation, time, the epistemology of testimony, linguistic norms, personal identity, causation, and modality. May be repeated for credit with change of topic.

#### **PHIL 358-0 Epistemology (1 Unit)**

Central problems in the theory of knowledge, emphasizing contemporary developments. A priori knowledge, perception memory, induction, and theories of meaning and truth. May be repeated for credit with change of topic.

#### **PHIL 359-0 Studies in Metaphysics (1 Unit)**

The most general features of reality and their relation to thought and language. Topics may include existence, time, identity, properties, truth, causality, and freedom. May be repeated for credit with change of topic.

#### **PHIL 360-0 Topics in Moral Philosophy (1 Unit)**

Philosophical analysis of recent or contemporary issues, theories, or figures in moral philosophy. May be repeated for credit with change of topic.

#### **PHIL 361-0 Topics in Social and Political Philosophy (1 Unit)**

Philosophical analysis of a recent or contemporary issue, individual philosopher, or school of thought in social and political philosophy. May be repeated for credit with change of topic.

#### **PHIL 362-0 Studies in the History of Ethical and Political Theory (1 Unit)**

Examination of one or more major figures or movements in the history of moral or political philosophy. May be repeated for credit with change of topic.

#### **PHIL 363-0 Kant's Moral Theory (1 Unit)**

Exploration of the moral and ethical thought of Immanuel Kant through careful study of Groundwork of the Metaphysics of Morals along with readings from the Critique of Practical Reason, Metaphysics of Morals, and Religion within the Bounds of Mere Reason.

*Ethics Values Distro Area*

#### **PHIL 364-0 Business and Professional Ethics (1 Unit)**

Application of ethical theories (Kantianism, utilitarianism, etc.) in a commercial setting. Topics include social responsibilities of corporations, public regulation, moral limits of marketing (e.g., marketing to children, noxious products), social justice versus fair compensation.

*Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

#### **PHIL 366-0 Advanced Studies in the Philosophy of Religion (1 Unit)**

Central problems in the philosophy of religion. May be repeated for credit with change of topic.

#### **PHIL 370-0 Philosophy & Literature (1 Unit)**

Issues involving the relationship between philosophy and literature. May be repeated for credit with change of topic.

#### **PHIL 373-1 The Brady Scholars Program: The Civically Engaged Life (0.5 Unit)**

Students in the Brady Scholars Program meet at least once each week, among themselves and with civic leaders, to plan their community service project, and to bring it to completion.

#### **PHIL 373-2 The Brady Scholars Program: The Civically Engaged Life (0.5 Unit)**

**PHIL 375-0 Issues in Environmental Philosophy (1 Unit)** Interdisciplinary analysis of a contemporary issue, individual philosopher, or school of thought in environmental philosophy. PHIL 375-0 taught also as ISEN 375-0. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

#### **PHIL 380-0 Philosophy of Art (1 Unit)**

Topics to be discussed might include the nature and purpose of art, art and perception, the nature of creativity, and the social responsibility of the artist. May also be taught as advanced topics in the philosophy and theory of one or several of the arts, e.g. in the philosophy of film, philosophy of figurative art, philosophy of music, etc. May be repeated for credit with change of topic.

*Advanced Expression*

#### **PHIL 390-0 Special Topics In Philosophy (1 Unit)**

May be repeated for credit with change of topic.

#### **PHIL 397-0 HONKOL -- Advanced research methods in philosophy Honors Colloquium (1 Unit)**

This course provides students as they design, research, and write their senior thesis with a group-research experience to refine their methods. Students will engage with each other's research and the Honors Convener to improve research methods to arrive at professional philosophical work. Each student presents their research project, and upon completion receives critical discussion of their presentation of research.

**PHIL 398-1 Senior Tutorial (1 Unit)** Senior thesis. Grade of K given in PHIL 398-1. Prerequisite: consent of instructor. *Advanced Expression*

**PHIL 398-2 Senior Tutorial (1 Unit)** Senior thesis. Grade of K given in PHIL 398-1. Prerequisite: consent of instructor. *Advanced Expression*

**PHIL 399-0 Independent Study (1 Unit)** Open to properly qualified students with consent of instructor. Can only be applied to Major or Minor after approval of DUS upon student's petition with dept form.

## **Philosophy Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/>)

archives/) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Because the study of philosophy involves the critical discussion of the most fundamental questions asked by human beings, it helps develop breadth of understanding and clarity of thought. This character of philosophical inquiry makes choosing philosophy as a second major attractive to many students. Moreover, with appropriate supporting courses, a philosophy major can be a sound preparation for many careers, whether or not they involve further study.

The core of the program is a firm grounding in the history of philosophy. Against this background, students may tailor a program that meets their particular interests.

Course	Title
<b>Major Requirements (13 units)</b>	
2 core history of philosophy courses: <sup>1,2</sup>	
PHIL 210-1	History of Philosophy - Ancient
& PHIL 210-3	and History of Philosophy - Early Modern
1 core logic course: <sup>1,2</sup>	
PHIL 150-0 or PHIL 250-0	Elementary Logic I Elementary Logic II
1 core course in moral or political philosophy: <sup>2</sup>	
PHIL 260-0 or PHIL 261-0	Introduction to Moral Philosophy Introduction to Political Philosophy
9 additional courses: <sup>3</sup>	
At least 6 must be at the 300 or 400 level. A student who is admitted to and completes 1 or more 400-level courses may apply such courses toward this requirement.	
Up to 3 of the following courses offered by the Brady Scholars Program in Ethics and Civic Life may be counted: <sup>4,5</sup>	
PHIL 273-1 & PHIL 273-2 & PHIL 273-3	The Brady Scholars Program: The Moral Life and The Brady Scholars Program: The Good Life and The Brady Scholars Program: The Good Society
1 of the 9 electives may be from outside the department if it has substantial philosophical content. Course approval must be obtained from the director of undergraduate studies by submitting a petition that includes the course syllabus. <sup>4</sup>	
At most 2 eligible PHIL 399-0 may count toward the major. See department website for criteria. Approval must be obtained in advance from both the instructor and the director of undergraduate studies.	

<sup>1</sup> Should be completed as early as possible, since the material is required to do well in more advanced work (although not formally prerequisite) and only offered in specific quarters during the academic year.

<sup>2</sup> **NOTE: Core requirements for the major cannot be replaced by courses taken outside the specified offerings of the Philosophy Department.** This includes courses completed on study abroad programs, online courses, courses transferred from other institutions, and courses offered by other departments at Northwestern. Only in cases of established exceptional hardship will the Philosophy Department undergraduate committee be able to consider a request to substitute a core credit (see department website FAQ for further details). A student who might be facing such circumstances needs to immediately contact the department advisor or the director of undergraduate studies to find out more about the possibilities.

<sup>3</sup> None may be a First-Year Seminar, College Seminar, First-Year Writing Seminar, the ISEN course PHIL 275-0, the Brady Scholars courses (PHIL 373-1 and PHIL 373-2), or senior tutorial courses PHIL 398-1 and PHIL 398-2.

<sup>4</sup> Students who apply courses offered in the Brady Program in Ethics and Civic Life (p. 306) towards the major may not petition to count another course offered outside the department towards the major.

<sup>5</sup> Students in the Brady Program in Ethics and Civic Life (<https://bradyprogram.northwestern.edu/>) who have completed the sequence of PHIL 273-1, PHIL 273-2, & PHIL 273-3 may petition with their department advisor to substitute the core requirement to take one of PHIL 260-0 or PHIL 261-0 by the whole sequence. Approval of such replacement will be conditional on such students' counting at least one additional PHIL-course at the 200-level toward the major.

## Honors in Philosophy

Majors with strong academic records (GPA in the major of 3.5) and an interest in pursuing honors should have project proposals approved by a faculty supervisor and the director of undergraduate studies or the philosophy department honors convenor before the end of winter quarter of junior year. They then take PHIL 398-1 in spring quarter of junior year and PHIL 398-2 in fall quarter of senior year; neither counts toward major requirements. (Students may petition to begin this thesis sequence in fall quarter of senior year, so that their sequence moves forward a quarter, respectively.) Near the end of the second quarter (i.e. PHIL 398-2), students submit completed senior theses, which are evaluated by the Honors Committee in terms of level of research and philosophical reflection. Students pursuing honors also need to enroll and participate in a senior thesis project research seminar colloquium, (<https://philosophy.northwestern.edu/undergraduate/honors-awards/>) PHIL 397-0 HONKOL – Advanced research methods in philosophy Honors Colloquium, in the Fall of their senior year; this course does count towards major requirements. It is led by the faculty honors convener and divided in two parts. Part 1 consists weekly meetings in Fall Quarter to discuss the research project in a collaborative research-group environment with all other advanced research students. Part 2 takes place in the Spring quarter in three 2h (minimum) sessions to prepare and organize the presentation of the research results at a conference open to the public.

Students whose papers, presentations, and grades meet department criteria are recommended to the college for graduation with honors. For more information see Honors and Awards (<https://philosophy.northwestern.edu/undergraduate/honors-awards/>) on the department website and Honors in the Major (p. 222).

## Philosophy Minor

The minor in philosophy requires students to be well-grounded in the history of philosophy, especially ancient and early modern, covering the major texts of ethical and political theory as well as the major texts of epistemology and metaphysics. The emphasis on argument and logical structure in philosophy requires familiarity with contemporary logic, at least up to the level of the first-order predicate calculus. Beyond this foundational requirement, students take 4 courses tailored to their individual interests and, typically, to complement work being done in their major. To provide the greatest latitude, only 3 of the 4 remaining courses need be at the 300 or 400 level.

Course	Title
<b>Minor Requirements (8 units)</b>	
4 core courses: <sup>1</sup>	
PHIL 150-0 or PHIL 250-0	Elementary Logic I Elementary Logic II
PHIL 210-1	History of Philosophy - Ancient

PHIL 210-3	History of Philosophy - Early Modern		
PHIL 260-0 or PHIL 261-0	Introduction to Moral Philosophy Introduction to Political Philosophy		
4 additional courses: <sup>2</sup>			
	At least 3 must be at the 300 or 400 level. A student who is admitted to and completes 1 or more 400-level courses may apply such courses toward this requirement.		
	Only 1 from the following courses offered by the Brady Scholars Program in Ethics and Civic Life may be counted: <sup>3</sup>		
PHIL 273-1 or PHIL 273-2 or PHIL 273-3	The Brady Scholars Program: The Moral Life The Brady Scholars Program: The Good Life The Brady Scholars Program: The Good Society		
	Only in exceptional cases and upon petition to the director of undergraduate studies may 1 eligible PHIL 399-0 (no more) count toward the minor. See department website for criteria. Approval must be obtained in advance from both the instructor and the director of undergraduate studies. Neither online-courses nor non-PHIL credits may be petitioned to count for the minor.		
<sup>1</sup>	<b>NOTE: Core requirements for the minor cannot be replaced by courses taken outside the specified offerings of the Philosophy Department.</b> This includes courses completed on study abroad programs, online courses, courses transferred from other institutions, and courses offered by other departments at Northwestern. Only in cases of established exceptional hardship will the Philosophy Department undergraduate committee be able to consider a request to substitute a core credit (see department website FAQ for further details). A student who might be facing such circumstances needs to immediately contact the department advisor or the director of undergraduate studies to find out more about the possibilities.		
<sup>2</sup>	None may be a First-Year Seminar, College Seminar, First-Year Writing Seminar, the ISEN course PHIL 275-0 Climate Change and Sustainability: Ethical Dimensions, the Brady Scholars courses (PHIL 373-1 and PHIL 373-2), or senior tutorial courses PHIL 398-1 and PHIL 398-2.		
<sup>3</sup>	For more about the Brady Program in Ethics and Civic Life (p. 306) see the relevant section of this catalog.		

## Physics and Astronomy

[physics.northwestern.edu](http://physics.northwestern.edu)

Physics seeks answers to fundamental questions about the natural world. Physicists study nature at all distance scales, from extremely large (stellar systems, galaxies, and the observable universe) to infinitesimally small (atoms, nuclei, and fundamental particles), as well as everything in between (biological systems, natural and artificial materials).

Many students in physics pursue career paths involving the natural sciences and engineering, both in academia and industry, while others find that the quantitative thinking and problem solving skills that characterize physics and astronomy can be fruitfully applied to many nonscience areas.

Majors normally take:

Course	Title
First Year:	
PHYSICS 140-1 & PHYSICS 140-2 & PHYSICS 140-3	Fundamentals of Physics and Fundamentals of Physics and Fundamentals of Physics

or PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3	General Physics and General Physics and General Physics
PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
Sophomore year:	
PHYSICS 239-0	Foundations of Modern Physics
	Majors also take a sequence of mathematics courses in their first and second years. The remaining requirements are a set of 300-level courses that depend on the chosen concentration, taken during sophomore, junior, and senior years.
	While there is no formal major in astronomy, students may select the astronomy concentration within the physics major.
	Students intending to study physics or astronomy in graduate school should choose the advanced physics or astronomy concentrations. They should also consider taking 2 or 3 units of PHYSICS 398-0 Independent Thesis Research or PHYSICS 399-0 Independent Study under the supervision of a faculty member, consisting of a research project in the student's area of concentration and, if possible, introductory graduate courses. Students intending graduate study in a subject other than physics or not planning to go to graduate school may select the flexible concentration, which can be tailored to their interests. All declared and prospective majors should meet with the director of undergraduate studies before the end of sophomore year, if not earlier.

## The Teaching of Physics

Weinberg College students pursuing a major in physics who also wish to be certified for secondary teaching must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## Advanced Placement

First-year students who have taken a college-level physics course in high school may be eligible to place ahead in the introductory physics sequence in the ways listed below. For details please refer to the First-Year Focus (<https://www.physics.northwestern.edu/undergraduate/first-year-focus.html>) section of the departmental webpage.

- A score of 5 on the College Board Advanced Placement Physics C (Mechanics) examination posts as PHYSICS 135-1 General Physics and lab course credit.
- A score of 5 on the College Board Advanced Placement Physics C (Electricity & Magnetism) examination taken either before or after calendar year 2020 posts as PHYSICS 135-2 General Physics and lab course credit.
- A score of 5 on the College Board Advanced Placement Physics C (Electricity & Magnetism) examination taken in 2020 posts as 1.0 unit of PHYSICS 1XX and 0.34 units lab credit posted as PHYSICS 1XL. A sufficient score on the departmental assessment exam can convert these units to PHYSICS 135-2 General Physics and PHYSICS 136-2 General Physics Laboratory.
- A score of 5 on the College Board Advanced Placement Physics 1 exam posts as PHYSICS 130-1 College Physics and lab course credit.
- A score of 5 on the College Board Advanced Placement Physics 2 exam posts as PHYSICS 130-2 College Physics and lab course credit.

- Students who took college-level physics on the campus of an accredited college while in high school may apply to have the credit transferred to Northwestern. A transcript from the college is needed. "College-level" classes taken at a high school are not eligible for transfer credit. For more details see Transferring Credit from Other Colleges (<https://www.weinberg.northwestern.edu/undergraduate/first-year-transfer/first-year/placement-and-credit/transfer-college-credit.html>).

## Programs of Study

- Physics Major (p. 397)
- Physics Minor (p. 398)
- Physics Second Major for ISP Students (p. 399)

**Note:** The laboratory components of first-year physics sequences require separate registration and bear separate credit. When a course in such a sequence is listed as a prerequisite for another course, the associated lab is also a prerequisite.

See below for Astronomy Courses (p. 396).

## Physics Courses

**PHYSICS 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PHYSICS 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PHYSICS 103-0 Ideas of Physics (1 Unit)** Topics in modern physics. Content varies—for example, relativity, the physics of music, and the progress of physics through history. Requires only high school mathematics and is designed for non-science majors. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 125-1 General Physics ISP (1 Unit)** General physics course relying extensively on calculus. Similar to PHYSICS 135-1 but more advanced and intended for ISP students. A concurrent advanced calculus course, MATH 281-1 is offered by the mathematics department. Prerequisite: first-year standing in ISP or consent of the department and concurrent enrollment in PHYSICS 126-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 125-2 General Physics for ISP (1 Unit)** General physics course relying extensively on calculus. Similar to PHYSICS 135-2 but more advanced and intended for ISP students. A concurrent advanced calculus course, MATH 281-2, is offered by the mathematics department. Prerequisite: first-year standing in ISP or consent of the department and concurrent enrollment in PHYSICS 126-2. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 125-3 General Physics for ISP (1 Unit)** General physics course relying extensively on calculus. Similar to PHYSICS 135-3 but more advanced and intended for ISP students. A concurrent advanced calculus course, MATH 281-3 is offered by the mathematics department. Prerequisite: first-year standing in ISP or consent of the department and concurrent enrollment in PHYSICS 126-3. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 126-1 Physics Laboratory for ISP (0.34 Unit)** Introductory physics laboratory for students taking PHYSICS 125-1, with which it must be taken concurrently.

**PHYSICS 126-2 Physics Laboratory for ISP (0.34 Unit)** Introductory physics laboratory for students taking PHYSICS 125-2, with which it must be taken concurrently.

**PHYSICS 126-3 Physics Laboratory for ISP (0.34 Unit)** Introductory physics laboratory for students taking PHYSICS 125-3, with which it must be taken concurrently.

**PHYSICS 130-1 College Physics (1 Unit)** Algebra-based physics primarily for premedical students who do not need to take calculus-based physics. Topics covered are similar to those of PHYSICS 135-1. Students with credit for a quarter of Physics 135 may not later receive credit for the comparable quarter of Physics 130. Prerequisites: algebra, trigonometry, and concurrent enrollment in PHYSICS 136-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 130-2 College Physics (1 Unit)** Algebra-based physics primarily for premedical students who do not need to take calculus-based physics. Topics covered are similar to those of PHYSICS 135-2. Students with credit for a quarter of Physics 135 may not later receive credit for the comparable quarter of Physics 130. Prerequisites: PHYSICS 130-1, PHYSICS 136-1, and concurrent enrollment in PHYSICS 136-2. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 130-3 College Physics (1 Unit)** Algebra-based physics primarily for premedical students who do not need to take calculus-based physics. Topics covered are similar to those of PHYSICS 135-3. Students with credit for a quarter of Physics 135 may not later receive credit for the comparable quarter of Physics 130. Prerequisites: PHYSICS 130-2, PHYSICS 136-2, and concurrent enrollment in PHYSICS 136-3. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 130-SG-1 Peer-Guided Study Group: College Physics 1 (0 Unit)** Peer-guided study group for students enrolled in PHYSICS 130-1. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**PHYSICS 130-SG-2 Peer-Guided Study Group: College Physics 2 (0 Unit)** Peer-guided study group for students enrolled in PHYSICS 130-2. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**PHYSICS 130-SG-3 Peer-Guided Study Group: College Physics 3 (0 Unit)** Peer-guided study group for students enrolled in PHYSICS 130-3. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**PHYSICS 135-1 General Physics (1 Unit)** Calculus-based physics for science and engineering majors and premedical students. Mechanics. Must be taken concurrently with PHYSICS 136-1. Prerequisites: MATH 220-1, MATH 220-2, and MATH 230-1 (may be taken concurrently). *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 135-2 General Physics (1 Unit)** Calculus-based physics for science and engineering majors and premedical students. Electricity and magnetism. Must be taken concurrently with PHYSICS 136-2. Prerequisites: PHYSICS 135-1, PHYSICS 136-1, MATH 230-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 135-3 General Physics (1 Unit)** Calculus-based physics for science and engineering majors and premedical students. Introduction to modern physics; wave phenomena. Must be taken concurrently

with PHYSICS 136-3. Prerequisites: PHYSICS 135-2, PHYSICS 136-2, MATH 230-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 135-SG-1 Peer-Guided Study Group: General Physics 1 (0 Unit)** Peer-guided study group for students enrolled in PHYSICS 135-1. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**PHYSICS 135-SG-2 Peer-Guided Study Group: General Physics 2 (0 Unit)** Peer-guided study group for students enrolled in PHYSICS 135-2. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**PHYSICS 135-SG-3 Peer-Guided Study Group: General Physics 3 (0 Unit)** Peer-guided study group for students enrolled in PHYSICS 135-3. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**PHYSICS 136-1 General Physics Laboratory (0.34 Unit)** Introductory physics laboratory for students taking PHYSICS 130-1, PHYSICS 135-1, or PHYSICS 140-1, with which it must be taken concurrently.

**PHYSICS 136-2 General Physics Laboratory (0.34-0.5 Unit)** Introductory physics laboratory for students taking PHYSICS 130-2 or PHYSICS 135-2, with which it must be taken concurrently.

**PHYSICS 136-3 General Physics Laboratory (0.34 Unit)** Introduction to fundamental topics in classical mechanics for physics majors and minors and students with a strong interest in physics. Must be taken concurrently with PHYSICS 136-1. Prerequisites: MATH 220-1, MATH 220-2, and MATH 230-1 (may be taken concurrently).

**PHYSICS 140-1 Fundamentals of Physics (1 Unit)** Introduction to fundamental topics in classical mechanics for physics majors and minors and students with a strong interest in physics. Prerequisites: MATH 220-1, MATH 220-2; concurrent enrollment in PHYSICS 136-1 and MATH 230-1. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 140-2 Fundamentals of Physics (1 Unit)** Introduction to fundamental topics in electricity and magnetism for physics majors and minors and students with a strong interest in physics. Prerequisites: PHYSICS 140-1, PHYSICS 136-1; concurrent enrollment in PHYSICS 136-2. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 140-3 Fundamentals of Physics (1 Unit)** Introduction to fundamental topics in wave phenomena and modern physics for physics majors and minors and students with a strong interest in physics. Prerequisites: PHYSICS 140-2, PHYSICS 136-2; concurrent enrollment in PHYSICS 136-3. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 239-0 Foundations of Modern Physics (1 Unit)** Principles of waves, probability, quantum theory, and selected topics from special relativity, statistical mechanics, optics, and atomic structure. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3 or equivalent; MATH 250-0 or equivalent or concurrent enrollment. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**PHYSICS 311-1 Mathematical Tools for the Physical Sciences (1 Unit)** Introduction to tools for solving physics problems, including integral calculus, complex numbers and complex algebra, matrices and vector spaces, differential equations, and Fourier analysis. Prerequisites:

PHYSICS 135-1 and PHYSICS 135-2 or equivalent (concurrent enrollment in PHYSICS 135-2 is sufficient); MATH 230-1. *Formal Studies Distro Area*

**PHYSICS 311-2 Mathematical Tools for the Physical Sciences (1 Unit)**

Introduction to tools for solving physics problems, including integral calculus, complex numbers and complex algebra, matrices and vector spaces, differential equations, and Fourier analysis. Prerequisites: PHYSICS 135-3 (or concurrent enrollment); PHYSICS 311-1 or equivalent. *Formal Studies Distro Area*

**PHYSICS 312-0 Scalar and Vector Field Methods in Physics (1 Unit)**

Physically contextualized introduction to the field concept, the associated methods of calculus, and the solution of key physical partial differential equations. Three lectures and one discussion per week. Prerequisites: PHYSICS 311-1, PHYSICS 311-2, or MATH 230-1, MATH 230-2, MATH 240-0, and MATH 250-0, or equivalents. *Natural Sciences Distro Area*

**PHYSICS 330-1 Classical Mech (1 Unit)** Introduction to classical

mechanics and mathematical methods of physics. Newtonian mechanics, oscillations, the Lagrangian and Hamiltonian formalisms, central-force motion. Prerequisites: PHYSICS 135-1 or equivalent and MATH 230-2 and PHYSICS 311-1 and PHYSICS 311-2; or MATH 240-0, MATH 250-0; or equivalent.

**PHYSICS 330-2 Classical Mechanics (1 Unit)** Introduction to classical mechanics and mathematical methods of physics. Motion in a non-inertial reference frame, kinematics of rigid bodies, systems with many degrees of freedom. Prerequisites: PHYSICS 330-1 or equivalent.

**PHYSICS 332-0 Statistical Mechanics (1 Unit)** Ideal gas, Boltzmann distribution, transport phenomena, fluctuation theory, Bose-Einstein and Fermi-Dirac statistics. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3; MATH 230-2 or equivalent.

**PHYSICS 333-1 Advanced Electricity & Magnetism (1 Unit)**

Electrostatics and magnetostatics, multipole expansion, solutions of Laplace's equation, images, analytic functions. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3 and MATH 230-2 and PHYSICS 311-1 and PHYSICS 311-2; or MATH 240-0, MATH 250-0; or equivalent.

**PHYSICS 333-2 Advanced Electricity & Magnetism (1 Unit)** Maxwell's equations, electromagnetic equations, electromagnetic wave propagation and radiation, microwave cavities, diffraction. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3 and MATH 230-2 and PHYSICS 311-1 and PHYSICS 311-2; or MATH 240-0, MATH 250-0; or equivalent.

**PHYSICS 337-0 Physics of Condensed Matter (1 Unit)** Emergent properties and collective descriptions when simple components of matter are combined into larger systems with varying degrees of order. Prerequisite: PHYSICS 339-1; PHYSICS 332-0 recommended.

**PHYSICS 339-1 Quantum Mechanics (1 Unit)** Introduction to quantum theory. Applications to atomic and molecular systems. The harmonic oscillator, the one-electron atom, the hydrogen molecule, barrier penetration. Prerequisites: second-year standing in ISP or PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3 or equivalent; PHYSICS 239-0; PHYSICS 330-1; PHYSICS 311-1 or MATH 240-0.

**PHYSICS 339-2 Quantum Mechanics (1 Unit)** Introduction to quantum theory. Applications to atomic and molecular systems. The harmonic oscillator, the one-electron atom, the hydrogen molecule, barrier penetration. Prerequisites: PHYSICS 339-1, second-year standing in ISP or PHYSICS 311-2 or MATH 250-0, MATH 351-0.

**PHYSICS 339-3 Particle and Nuclear Physics (1 Unit)** Nuclei and their constituents; nuclear models; alpha and beta decay; nuclear

fission and fusion; the strong, electromagnetic, and weak interactions; and the fundamental particles and particle schemes. Prerequisites: PHYSICS 339-1 and PHYSICS 339-2.

**PHYSICS 345-0 Introduction to General Relativity (1 Unit)** Review of special relativity and Newtonian gravity; curved space-time; geodesics and conservation laws; Schwarzschild geometry; tests of general relativity; black holes; linearized gravity and gravitational waves; and big bang cosmology. Prerequisites: PHYSICS 330-1 and PHYSICS 330-2 or consent of instructor.

**PHYSICS 352-0 Introduction to Computational Physics (1 Unit)** Application of computing to physics: Monte Carlo simulation, numerical integration of equations of motion, discrete element methods in electromagnetism. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3 or equivalent; MATH 250-0 or equivalent (concurrent enrollment is sufficient); COMP\_SCI 110-0 or equivalent prior programming experience.

**PHYSICS 357-0 Optics Laboratory (1 Unit)** Optics/laser lab focusing on optical instruments widely used in medical/biological studies, including optical microscopy, fluorescence spectroscopy, tumor detection in optical scattering, and optical fibers in endoscopes. Prerequisite: consent of instructor. *Natural Sciences Distro Area*

**PHYSICS 359-0 Electronics (1 Unit)** Introduction to modern electronics, construction of elementary analog and digital circuits. Prerequisites: PHYSICS 333-1 and PHYSICS 333-2 or consent of instructor.

**PHYSICS 360-0 Advanced Physics Laboratory (1 Unit)** Modern experimental techniques and data analysis methods. Both classic and modern experiments in atomic/nuclear physics, electricity and magnetism, optics, condensed matter physics, and nonlinear dynamics. This laboratory emphasizes independent work. This course consists primarily of two four-hour sessions per week, which may have lecture and laboratory periods. Prerequisites: PHYSICS 239-0 or PHYSICS 339-1, and PHYSICS 333-1, or permission of instructor. *Advanced Expression*

**PHYSICS 361-0 Classical Optics and Special Relativity (1 Unit)** Advanced topics following from electrodynamics, including advanced classical optics, Fraunhofer and Fresnel diffraction, radiation from accelerated charges, wave guides and/or antennae, and special relativity, including dynamics. Prerequisites: PHYSICS 333-1 and PHYSICS 333-2.

**PHYSICS 371-0 Nonlinear Dynamics and Chaos (1 Unit)** This course covers the mathematics of nonlinear oscillations, fractal geometry, chaotic dynamics, the dynamics of complex systems, and physics applications of these ideas. Projects involving applications of nonlinear dynamics and chaos are integral to this course. Prerequisites: PHYSICS 330-1 and PHYSICS 330-2, and some familiarity with computer programming.

#### **PHYSICS 390-0 Topics in Physics (1 Unit)**

This course will explore a specialized or current topic of research in a field of physics. Although the topic can change, it is expected that independent of the content, this is an advanced physics course that builds on core physics knowledge. Prerequisites vary by offering. It would generally require knowledge of at least one core physics course (Physics 330, 332, 333, 339) or the equivalent mathematics or permission from the instructor.

**PHYSICS 398-0 Independent Thesis Research (1-2 Units)** Individual study under the direction of a faculty member. Open only to advanced students pursuing departmental honors.

**PHYSICS 399-0 Independent Study (1-2 Units)** Opportunity to study an advanced subject of interest under the individual direction of a faculty member. Open to all advanced students; consent of instructor required.

## **Astronomy Courses**

All 100-level astronomy courses are specifically designed for students without technical backgrounds and require a mathematics background of only high school algebra.

**ASTRON 101-0 Modern Cosmology (1 Unit)** Modern views on the structure of the universe, its past, present, and future. For nonscience majors who want to take a more detailed course after completing ASTRON 120-0. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ASTRON 102-0 Milky Way Galaxy (1 Unit)** Structure of the galaxy, star formation, interstellar clouds and dust, star clusters, neutron stars and black holes, the galactic center. For nonscience majors who want to take a more detailed course after completing ASTRON 120-0. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ASTRON 103-0 Solar System (1 Unit)** The planets and their moons, the sun, comets, asteroids. For nonscience majors who want to take a more detailed course after completing ASTRON 120-0. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ASTRON 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ASTRON 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**ASTRON 106-0 A Brief Journey Through the Invisible Universe (1 Unit)** A conceptual course exploring the invisible radio universe. Topics include: the historical development of the radio sky, how radio telescopes are fundamentally different than optical telescopes, numerous discoveries with multiple Nobel Prizes over the last century (pulsars, quasars, the Big Bang cosmic microwave background radiation, organic molecules, shadows of supermassive black holes) and search for radio signals from alien civilizations. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ASTRON 111-0 Introduction to Astrobiology (1 Unit)** The modern scientific perspective on the question of life elsewhere in the universe. The prospects for life on Mars. The discovery of extrasolar planets and the search for extrasolar biospheres. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ASTRON 120-0 Highlights of Astronomy (1 Unit)** Acquaints students with modern ideas about the solar system, stars, galaxies, and the universe. Emphasizes fundamental principles and underlying concepts. *Natural Sciences Distro Area Natural Sciences Foundational Discipline*

**ASTRON 220-1 Introduction to Astrophysics I: Life Cycle of Stars and Planets (1 Unit)** The course will explore the origin and evolution of star/planet systems, focusing on underlying physical processes and observational techniques. We will discuss the recent discovery of thousands of planets orbiting stars other than our Sun - a.k.a. "exoplanets". We will also discuss stellar remnant black holes. (Prerequisites: PHYSICS 135-1, PHYSICS 135-2 (concurrent registration in PHYSICS 135-2 is acceptable). *Natural Sciences Distro Area*

**ASTRON 220-2 Introduction to Astrophysics II: Galactic Evolution and Cosmology (1 Unit)** The course will explore modern cosmology, including dark matter, the Big Bang, curved space-time, the origin and evolution of the first stars and galaxies, cosmic acceleration, and dark energy. In all cases, the focus will be on the underlying physical processes and the observational techniques used. (Prerequisites: ASTRON 220-1 or all of PHYSICS 135-1, PHYSICS 135-2, and PHYSICS 135-3.) *Natural Sciences Distro Area*

**ASTRON 305-0 Basics of Radio Astronomy (1 Unit)** Radio astronomy is the study of natural radio emission from the sky, providing important clues about the history of the universe. Topics include how a radio telescope receives invisible signals, how dramatically the radio sky differs from the optical sky, and interferometry. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, PHYSICS 135-3 (or equivalent) or PHYSICS 332-0; MATH 220-2 or equivalent. *Natural Sciences Distro Area*

**ASTRON 314-0 Planetary Astrophysics (1 Unit)** Methods of exoplanet detection. The observed architecture of exoplanetary systems. Formation and evolution of planetary systems. Modeling exoplanet interiors and atmospheres. Exoplanet habitability and the search for bio-signatures. Prerequisites: PHYSICS 330-1 and PHYSICS 330-2, or equivalent.

**ASTRON 321-0 Observational Astrophysics (1 Unit)** Geometric optics applied to design of optical and x-ray telescopes; diffraction and the Airy disk; radio and optical interferometry and aperture synthesis; adaptive optics; recent developments in detector technology; quantum and thermal noise in astronomy. Independent research projects using the CCD camera and 18-inch refractor in Dearborn Observatory. Prerequisite: ASTRON 220-1 or ASTRON 220-2. *Advanced Expression*

**ASTRON 325-0 Stellar Astrophysics (1 Unit)** Physics of stellar interiors, stellar atmospheres, and star formation. Specific topics include simple stellar models, nuclear energy generation, overview of evolutionary phases, white dwarfs, neutron stars, interstellar gas and dust grains, gravitational collapse. Prerequisite: ASTRON 220-1 or ASTRON 220-2.

**ASTRON 329-0 Extragalactic Astrophysics and Cosmology (1 Unit)** Big bang cosmology, thermal history of the universe, primordial nucleosynthesis, microwave background, dark matter, largescale structure, galaxy formation, spiral and elliptical galaxies, groups and clusters of galaxies. Prerequisite: ASTRON 220-1 or ASTRON 220-2.

**ASTRON 331-0 Astrophysics for ISP (1 Unit)** Stellar structure and evolution: nucleosynthesis, supernova phenomena, white dwarfs, neutron stars, and black holes. Limited to students enrolled in ISP or with consent of the physics department. Prerequisites: PHYSICS 135-1, PHYSICS 135-2, & PHYSICS 135-3, or equivalent.

**ASTRON 390-0 Current Topics in Astronomy (1 Unit)** Explores in detail an area of current research interest in astrophysics. Contact the department or instructor for specifics. May be repeated for credit with change of topic. Prerequisites vary. *Natural Sciences Distro Area*

**ASTRON 398-0 Honors Independent Study (1-2 Units)**

**ASTRON 399-0 Independent Study (1-2 Units)** Opportunity to study an advanced subject under the individual direction of a faculty member. Open to all advanced students. Consent of instructor required.

## Physics Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/>)

archives/) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

The physics major is designed to help students acquire a broad and varied background in physics and related fields; it provides an excellent intellectual foundation for many careers. The three basic steps toward completing the major are fulfilling prerequisites in introductory physics and calculus; taking a core sequence (common to all concentrations) of classical physics, modern physics, and mathematics; and completing a course concentration.

Course	Title
Prerequisites	
MATH 220-1 & MATH 220-2 or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Differential Calculus and Single-Variable Integral Calculus  Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
PHYSICS 140-1 & PHYSICS 140-2 & PHYSICS 140-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3 or PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3 or PHYSICS 125-1 & PHYSICS 125-2 & PHYSICS 125-3 & PHYSICS 126-1 & PHYSICS 126-2 & PHYSICS 126-3	Fundamentals of Physics and Fundamentals of Physics and Fundamentals of Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory  General Physics and General Physics and General Physics and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory  General Physics ISP and General Physics for ISP and General Physics for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP

**Major Requirements (units vary, depending on math courses and concentration selected)**

10–11 core courses (depending on math concentration)

Core mathematics and mathematical tools courses listed below or equivalent courses approved by the department:<sup>1</sup>

MATH 230-1 & MATH 230-2	Multivariable Differential Calculus and Multivariable Integral Calculus <sup>1</sup>
PHYSICS 311-1 & PHYSICS 311-2 or MATH 240-0 & MATH 250-0 & MATH 351-0	Mathematical Tools for the Physical Sciences and Mathematical Tools for the Physical Sciences  Linear Algebra and Elementary Differential Equations and Fourier Analysis and Boundary Value Problems

Core physics courses:

PHYSICS 239-0	Foundations of Modern Physics
PHYSICS 330-1	Classical Mech
PHYSICS 332-0	Statistical Mechanics
PHYSICS 333-1	Advanced Electricity & Magnetism
PHYSICS 339-1	Quantum Mechanics

1 lab course chosen from:

ASTRON 321-0	Observational Astrophysics
PHYSICS 357-0	Optics Laboratory
PHYSICS 359-0	Electronics
PHYSICS 360-0	Advanced Physics Laboratory (may not also count toward the concentration)

5–6 courses in the chosen concentration (A course may not be counted toward more than one requirement.)

Advanced Physics (p. 398)

Astronomy (p. 398)

Flexible (p. 398)

- <sup>1</sup> PHYSICS 312-0 Scalar and Vector Field Methods in Physics may be used in place of MATH 230-2 Multivariable Integral Calculus with department permission.

## Concentrations

### Advanced Physics (6 units)

Course	Title
PHYSICS 330-2	Classical Mechanics
PHYSICS 333-2	Advanced Electricity & Magnetism
PHYSICS 339-2	Quantum Mechanics
1 lab course from:	
ASTRON 321-0	Observational Astrophysics
PHYSICS 357-0	Optics Laboratory
PHYSICS 359-0	Electronics
PHYSICS 360-0	Advanced Physics Laboratory
2 other 300-level physics or astronomy courses other than:	
PHYSICS 311-1 & PHYSICS 311-2	Mathematical Tools for the Physical Sciences and Mathematical Tools for the Physical Sciences
PHYSICS 312-0	Scalar and Vector Field Methods in Physics
PHYSICS 398-0	Independent Thesis Research
PHYSICS 399-0	Independent Study
ASTRON 398-0	Honors Independent Study
ASTRON 399-0	Independent Study

### Astronomy (6 units)

Course	Title
PHYSICS 330-2	Classical Mechanics
PHYSICS 333-2	Advanced Electricity & Magnetism
PHYSICS 339-2	Quantum Mechanics
ASTRON 220-1	Introduction to Astrophysics I: Life Cycle of Stars and Planets
or ASTRON 220-2	Introduction to Astrophysics II: Galactic Evolution and Cosmology
2 other 300-level astronomy classes other than ASTRON 398-0 or ASTRON 399-0	

### Flexible (5 units)

Course	Title
3 300-level physics or astronomy lecture or lab courses	
2 courses from the following:	
BMD_ENG 327-0	Magnetic Resonance Imaging
CHEM 307-0	Supramolecular Design of Materials and Nanostructures
ELEC_ENG 360-0	Introduction to Feedback Systems
ELEC_ENG 381-0	Electronic Properties of Materials
ES_APPM 322-0	Applied Dynamical Systems
MAT_SCI 315-0	Phase Equilibria & Diffusion of Materials
MAT_SCI 331-0	Soft Materials
MAT_SCI 351-1	Introductory Physics of Materials
MAT_SCI 351-2	Introductory Physics of Materials
MAT_SCI 361-0	Crystallography & Diffraction
MAT_SCI 376-0	Nanomaterials
MECH_ENG 346-0	Introduction to Tribology

Any 300-level physics or astronomy lecture or lab course that is not otherwise required

May not count toward any of these requirements:

PHYSICS 311-1 & PHYSICS 311-2	Mathematical Tools for the Physical Sciences and Mathematical Tools for the Physical Sciences
PHYSICS 312-0	Scalar and Vector Field Methods in Physics
PHYSICS 398-0	Independent Thesis Research
PHYSICS 399-0	Independent Study
ASTRON 398-0	Honors Independent Study
ASTRON 399-0	Independent Study

## Honors in Physics and Astronomy

Majors with strong records in their physics, astronomy, and mathematics courses and an interest in pursuing honors should notify the director of undergraduate studies in October of senior year. Eligible students must enroll for 2 units of PHYSICS 398-0 Independent Thesis Research or PHYSICS 399-0 Independent Study by the time of graduation. They participate in research culminating in a written report.

Students whose research reports and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the director of undergraduate studies and see Honors in the Major (p. 222).

## Physics Minor

The minor in physics gives students an understanding of the most essential concepts in the field and carries the same prerequisites as the major, followed by a lighter set of requirements.

Course	Title
Prerequisites	
MATH 220-1 & MATH 220-2	Single-Variable Differential Calculus and Single-Variable Integral Calculus
or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
PHYSICS 140-1 & PHYSICS 140-2 & PHYSICS 140-3	Fundamentals of Physics and Fundamentals of Physics and Fundamentals of Physics
& PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
or PHYSICS 135-1 & PHYSICS 135-2 & PHYSICS 135-3	General Physics and General Physics and General Physics
& PHYSICS 136-1 & PHYSICS 136-2 & PHYSICS 136-3	and General Physics Laboratory and General Physics Laboratory and General Physics Laboratory
or PHYSICS 125-1 & PHYSICS 125-2 & PHYSICS 125-3	General Physics ISP and General Physics for ISP and General Physics for ISP
& PHYSICS 126-1 & PHYSICS 126-2 & PHYSICS 126-3	and Physics Laboratory for ISP and Physics Laboratory for ISP and Physics Laboratory for ISP

### Minor Requirements (9 units)

Core mathematics and mathematical tools courses listed below or equivalent courses approved by the department:<sup>1</sup>

MATH 230-1 & MATH 230-2	Multivariable Differential Calculus and Multivariable Integral Calculus <sup>1</sup>
PHYSICS 311-1 & PHYSICS 311-2	Mathematical Tools for the Physical Sciences and Mathematical Tools for the Physical Sciences

or MATH 240-0 & MATH 250-0	Linear Algebra and Elementary Differential Equations
<b>Core physics courses</b>	
PHYSICS 239-0	Foundations of Modern Physics
PHYSICS 330-1	Classical Mech
PHYSICS 333-1	Advanced Electricity & Magnetism
<b>2 other 300-level physics or astronomy courses other than:</b>	
PHYSICS 311-1 & PHYSICS 311-2	Mathematical Tools for the Physical Sciences and Mathematical Tools for the Physical Sciences
PHYSICS 312-0	Scalar and Vector Field Methods in Physics
PHYSICS 398-0	Independent Thesis Research
PHYSICS 399-0	Independent Study
ASTRON 398-0	Honors Independent Study
ASTRON 399-0	Independent Study

PHYSICS 360-0	Advanced Physics Laboratory
Plus 3 courses chosen from 300-level physics or astronomy courses other than:	
PHYSICS 311-1 & PHYSICS 311-2	Mathematical Tools for the Physical Sciences and Mathematical Tools for the Physical Sciences
PHYSICS 312-0	Scalar and Vector Field Methods in Physics
PHYSICS 398-0	Independent Thesis Research
PHYSICS 399-0	Independent Study
ASTRON 398-0	Honors Independent Study
ASTRON 399-0	Independent Study
And other than those required by ISP:	
PHYSICS 339-1 & PHYSICS 339-2	Quantum Mechanics and Quantum Mechanics
PHYSICS 339-3 or PHYSICS 337-0	Particle and Nuclear Physics Physics of Condensed Matter
ASTRON 331-0	Astrophysics for ISP

- <sup>1</sup> PHYSICS 312-0 Scalar and Vector Field Methods in Physics may be used in place of MATH 230-2 Multivariable Integral Calculus with department permission.
- Students pursuing an ISP/physics double major may not substitute INTG\_SCI 398-0 for any physics or math course in the ISP curriculum. They do not have to choose a physics course concentration.

## Physics Second Major for ISP Students

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The Integrated Science Program is a highly selective BA program in Weinberg College that includes the following as part of its curriculum:

Course	Title
PHYSICS 125-1	General Physics ISP
& PHYSICS 125-2	and General Physics for ISP
& PHYSICS 125-3	and General Physics for ISP
& PHYSICS 126-1	and Physics Laboratory for ISP
& PHYSICS 126-2	and Physics Laboratory for ISP
& PHYSICS 126-3	and Physics Laboratory for ISP
PHYSICS 339-1	Quantum Mechanics
& PHYSICS 339-2	and Quantum Mechanics
PHYSICS 339-3	Particle and Nuclear Physics
or PHYSICS 337-0	Physics of Condensed Matter
ASTRON 331-0	Astrophysics for ISP

Application to this program is made directly to ISP.

It is possible to complete a double major in physics and ISP by completing the following 6 additional upper-level courses:

Course	Title
PHYSICS 330-1	Classical Mech
& PHYSICS 330-2	and Classical Mechanics
or PHYSICS 333-1	Advanced Electricity & Magnetism
& PHYSICS 333-2	and Advanced Electricity & Magnetism
1 lab course from:	
ASTRON 321-0	Observational Astrophysics
PHYSICS 357-0	Optics Laboratory
PHYSICS 359-0	Electronics

## Honors in Physics and Astronomy

Majors with strong records in their physics, astronomy, and mathematics courses and an interest in pursuing honors should notify the director of undergraduate studies in October of senior year. Eligible students must enroll for 2 units of PHYSICS 398-0 Independent Thesis Research or PHYSICS 399-0 Independent Study by the time of graduation. They participate in research culminating in a written report.

Students whose research reports and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the director of undergraduate studies and see Honors in the Major (p. 222).

## Political Science

[polisci.northwestern.edu](http://polisci.northwestern.edu)

Political science is the study of politics and power from domestic, international, and comparative perspectives. It entails understanding political ideas, ideologies, institutions, public policies, and behavior, as well as groups, classes, government, diplomacy, law, strategy, and war. A background in political science is valuable for citizenship and political action, as well as for future careers in government, law, business, media, education, nonprofit, public service, and more.

Northwestern's Department of Political Science offers classes in the four major subfields of the discipline—American Politics, Comparative Politics, International Relations, and Political Theory—as well as Methods of Research and Analysis. Many courses cut across subfields. Political science faculty are closely associated with other departments in Weinberg College, Pritzker School of Law, and the Kellogg School of Management, as well as several interdisciplinary programs, including the Buffett Institute for Global Studies, the Institute for Policy Research, the Program of African Studies, the Gender and Sexuality Studies Program, the Chicago Field Studies Program, the Environmental Policy and Culture Program, and the Center for Civic Engagement.

## Certificate of Achievement in a Foreign Language

Mastery of a foreign language has become increasingly important to understanding politics at home and abroad. To encourage students to become proficient in a foreign language, the Department of Political Science offers a certificate of achievement in a foreign language that may be earned either through coursework in political science conducted in a foreign language (two or more courses, usually completed during study abroad) or through the substantial use of foreign language materials in a thesis or other independent study-type (POLI\_SCI 399-0) work. Faculty advisers can discuss options with students. The certificate must be approved by the Director of Undergraduate Studies.

## Certificate of Achievement in Quantitative Skills

Through this certificate of achievement, the department recognizes majors who have sought the quantitative skills that are increasingly important in many careers and in social science research. The certificate requires a grade of B or better in POLI\_SCI 312-0 and in one additional advanced quantitative training course (usually from another department), as well as completion of a research project such as those required for POLI\_SCI 395-0, a senior thesis (POLI\_SCI 398-1 & POLI\_SCI 398-2), independent study POLI\_SCI 399-0, or another 300-level political science course that employs quantitative methods. The certificate must be approved by the Director of Undergraduate Studies.

## The Teaching of Political Science

Weinberg College students pursuing a major in political science who also wish to be certified for secondary teaching of political science with history must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students interested in this option are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## Programs of Study

- Political Science Major (p. 404)
- Political Science Minor (p. 406)

**POLI\_SCI 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**POLI\_SCI 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**POLI\_SCI 201-0 Introduction to Political Theory (1 Unit)** Examination of texts in political theory. Topics vary but often include justice, the Greek polis, the modern state, individualism, representative democracy. *Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216)* *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 210-0 Introduction to Empirical Methods in Political Science (1 Unit)** Tools political scientists use. How qualitative, quantitative, and experimental research designs help answer difficult descriptive and

causal questions. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**POLI\_SCI 211-0 Introduction to Interpretive Methods in Political Science (1 Unit)** Philosophy of inquiry and interpretive research methods for students of political science. Examines diverse schools of thought on research methods and their relevance for research goals. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 212-0 Evaluating Evidence (1 Unit)** Introduction to evaluation of qualitative and quantitative evidence across science, politics, society, health, education, and industry. POLI\_SCI 212-0 and COG\_SCI 202-0 are taught together; may not receive credit for both courses. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area Social Behavioral Sciences Distro Area*

**POLI\_SCI 220-0 American Government and Politics (1 Unit)** The structure and process of American politics from competing perspectives. Analysis of representation, voting, interest groups, parties, leadership, and policymaking institutions. The gateway course for the American politics subfield. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 230-0 Introduction to Law in the Political Arena (1 Unit)** Roles of law in society and politics. Police and prisons, law and social change, courts and politics, legal reasoning, Supreme Court decision making, judicial discretion, legal strategies for making change. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 240-0 Introduction to International Relations (1 Unit)**

Introduction to the major theories, concepts, and problems of contemporary international relations. Security, political economy, and cooperation. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 250-0 Introduction to Comparative Politics (1 Unit)** Politics of developing and industrialized countries across the world. Major topics include states and state-making, democracy and dictatorship, conflict and violence, constitutions, civil society, and political economy. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 301-0 Classical Political Theory (1 Unit)** Political thought of Greece and Rome in historical context and with attention to contemporary theoretical interest. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**POLI\_SCI 302-0 Subjects, Citizens, Revolutionaries: Early Modern Political Thought (1 Unit)** Political philosophers from the 16th, 17th, and 18th centuries. Topics include sources of power and their impact on justice, equality, and law. No prerequisites, but some knowledge of political theory is desirable. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**POLI\_SCI 303-0 Modernity and Its Discontents (1 Unit)** Examination of late 19th and early 20th century social and political thought in the works of writers such as Marx, Weber, Mill, Kafka, Darwin, Nietzsche, Freud, and de Beauvoir. No prerequisites, but some knowledge of political theory is desirable. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**POLI\_SCI 304-0 Human Rights Between East and West (1 Unit)** In this course, students consider challenges leveled against the declared universalism of human rights. They assess these challenges from the perspective of two non-western traditions: Islam and Confucianism.

*Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area  
Global Perspectives on Power, Justice, and Equity*

**POLI\_SCI 306-0 American Political Thought (1 Unit)** Advanced introduction to the development of political thought in the United States from the revolutionaries to the 20th century pragmatists. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**POLI\_SCI 307-0 Deportation Law and Politics (1 Unit)**

Analysis of deportation law and politics from colonial America through today. Requires two visits to Chicago immigration courts.

*Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area  
U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 308-0 Critical Theory and the Study of Politics (1 Unit)** Critical theory examines and contests hegemonic thinking about politics and envisages alternate worlds of political possibility. Note: students cannot receive credit for both POLI\_SCI 308-0 (Evanston) and POLI\_SCI 308-SA (study abroad).

**POLI\_SCI 308-SA Critical Theory and the Study of Politics (1 Unit)**

Critical theory examines and contests hegemonic thinking about politics and envisages alternate worlds of political possibility. This study abroad course is restricted to students in Northwestern's Paris program in critical theory, literature, and media.

**POLI\_SCI 309-0 Political Theories of the Rule of Law (1 Unit)** Key documents and debates in the development of theories of law and jurisprudence. From Aeschylus to contemporary democratic and legal theories and major court cases on topics ranging from torture to Title IX. POLI\_SCI 309-0 and LEGAL\_ST 309-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**POLI\_SCI 310-0 Methods of Political Inference (1 Unit)**

Methods for inferences based on data in political research. Research design and quantitative and qualitative methods of inference. Focuses on descriptive, statistical, and causal inference and the application of different methods to substantive problems.

*Formal Studies Distro Area*

**POLI\_SCI 312-0 Statistical Research Methods (1 Unit)** Statistics and data science as applied in political science, including research design, data collection and handling, social scientific communication, and transparency practices. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**POLI\_SCI 320-0 The American Presidency (1 Unit)**

Structural foundations and historical development of the American presidency; predominant scholarly theories of presidential power and leadership; contemporary issues and debates.

Prerequisite: POLI\_SCI 220-0 or equivalent.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 321-0 Urban Politics (1 Unit)** Structure of local and regional political power and its relation to the social and economic structure of community. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 323-0 Public Opinion and Voting Behavior (1 Unit)**

Who votes and for whom. Social, psychological, economic, and political factors influencing election choices. Sources of opinions. Focus on American presidential elections with some comparative and nonpresidential material.

Prerequisite: POLI\_SCI 220-0 or equivalent.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 324-0 Political Parties and Elections (1 Unit)**

Role of political parties in a democratic society. Topics include nomination, national conventions, political funding, campaigns, party organization, and national, state, and local parties.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 325-0 Congress and the Legislative Process (1 Unit)**

Organization of legislatures to make public policy; impact of constituents and political parties on legislative decision making; polarization; legislative-executive relations. Emphasis on the US Congress and contemporary politics.

Prerequisite: POLI\_SCI 220-0 or equivalent.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 326-0 Race and Public Policy (1 Unit)** Analysis of how diversity shapes policy in the United States and how policies contribute to racial and ethnic diversity. Immigration reform, school choice, residential segregation, and criminal justice. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 327-0 African American Politics (1 Unit)**

Survey of black politics in the United States, including blacks' relations with government, whites, political parties, public policy, and electoral politics.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 328-0 Public Policy (1 Unit)**

The role of government in regulating economic and social behavior; theories of public policy making; sources and effects of public policy.

*Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 329-0 U.S. Environmental Politics (1 Unit)**

Political problems associated with human impact on natural environment; pollution, natural resources, public lands, land use, energy, and population.

*Social Behavioral Sciences Distro Area*

**POLI\_SCI 331-0 Politics of the Supreme Court (1 Unit)**

Operation of appellate courts, with emphasis on the US Supreme Court. Decision making by appellate courts and the development of public policy.

Prerequisite: POLI\_SCI 220-0 or POLI\_SCI 230-0.

**POLI\_SCI 332-0 Constitutional Law I (1 Unit)**

Introduction to interpretation of the US Constitution by the Supreme Court. Judicial review, federalism, congressional and executive authority, separation of powers. Taught with LEGAL\_ST 332-0; may not receive credit for both courses.

Prerequisite: POLI\_SCI 220-0 or POLI\_SCI 230-0.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 333-0 Constitutional Law II: Civil and Political Rights (1 Unit)**

Consideration of US Supreme Court decisions dealing with civil and political rights, including equality, freedom of speech, and freedom of religion. LEGAL\_ST 333-0 and POLI\_SCI 333-0 are taught together; may not receive credit for both courses.

Prerequisite: POLI\_SCI 220-0 or POLI\_SCI 230-0.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 334-0 Latino Politics (1 Unit)** Implications of Latino politics including contemporary social and political developments of Latino communities in the United States from a comparative urban framework. Focus on Mexican and Cuban Americans and Puerto Ricans. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 335-0 Political Psychology (1 Unit)** Examination of mental processes that underpin political judgments. Origins of political views, influence of parties and news media, decision-making heuristics and biases. Emphasis on ordinary citizens; some attention to elites. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 336-0 Immigration Politics and Policy (1 Unit)** Introduction to immigration politics in the U.S. with a focus on policies, public opinion, participation, and mobilization. Emphasis on relationships between nativity, citizenship status, legal status, and race/ethnicity. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 337-0 Gender and Politics (1 Unit)** This class investigates how gender shapes politics and policy and how these in turn shape gender with a focus on the United States in comparative and global context. It analyzes the gendered character of citizenship, political participation and representation, and social and economic rights. It aims to understand gendered politics from both "top down" and "bottom up" perspectives. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 338-0 Labor Politics in America (1 Unit)** Examines how capitalism, law, politics, public policy, and issues of race, ethnicity, and gender, have interacted to shape workers' rights and capacities to mobilize in collective action since the U.S. founding. Emphasis on employer power, legacies of slavery, labor's orientation toward immigration, rise and fall of unions, declining quality of low-wage work, emergence of new forms of labor organizing. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 340-0 International Relations Theory (1 Unit)** Conceptual approaches to international relations, including "national interest," sovereignty, international norms and law, and rationality. Prerequisite: POLI\_SCI 240-0 or consent of instructor. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 341-0 International Political Economy (1 Unit)** Introduction to the politics of international economic relations. Roots and evolution of the international political economy. Politics of the international rules, institutions, and ideas governing trade, monetary and financial relations, development, and economic statecraft. Prerequisite: POLI\_SCI 240-0 or consent of instructor. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **POLI\_SCI 342-0 International Organizations (1 Unit)**

An examination of the politics, law, and history of international organizations from the 20th century to the present. Emphasis on the main inter-governmental organizations including the United Nations, the WTO, the WHO, and international courts. POLI\_SCI 342-0 and LEGAL\_ST 342-0 are taught together; may not receive credit for both courses.

Prerequisite: POLI\_SCI 240-0 or consent of instructor.

*Social Behavioral Sciences Distro Area*

**POLI\_SCI 343-0 Politics of International Law (1 Unit)** Non-utopian political science analysis of how law is used to promote collective goals

and regulate international relations. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 344-0 U.S. Foreign Policy (1 Unit)** How US foreign policy is formulated, executed, and contested. Topics include democracy promotion, nuclear proliferation, foreign aid, the rise of China, US-Russia relations, terrorism, humanitarian intervention, and cyberwarfare. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **POLI\_SCI 345-0 National Security (1 Unit)**

Basic issues in national security, focusing primarily on the United States. Topics include the nature of "national interest," major actors in national security policy making and military strategy, and the influence and role of the defense establishment.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **POLI\_SCI 346-0 European Union in International Affairs (1 Unit)**

Introduction to the institutions and policies of the European Union today. *Historical Studies Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **POLI\_SCI 347-0 Ethics in International Relations (1 Unit)**

Role of ethical considerations in international relations: where and when ethical questions are raised and by whom; causes and predictability of tensions between the ethics and self-interests of nations and political figures.

*Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**POLI\_SCI 348-0 Globalization (1 Unit)** Political foundations of global markets for goods and services, production, finance, and workers. Implications of market globalization for national politics, institutions, and societies in Global Northern and Southern contexts. Prerequisite: POLI\_SCI 240-0 or equivalent or consent of instructor. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

#### **POLI\_SCI 349-0 International Environmental Politics (1 Unit)**

International cooperation and conflict resolution of global and transnational environmental problems such as climate change. Role of political, economic, and normative considerations in the formation of politically feasible solutions to international environmental problems.

**POLI\_SCI 350-0 Social Movements (1 Unit)** Theory and case studies examining the processes shaping collective challenges to authority. Topics include causes and mechanics of mobilization, the contexts in which movements emerge, repression and violence, strategies, and determinants of movement outcomes. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 351-0 Politics of the Middle East (1 Unit)** Survey of politics and political history of the Middle East and North Africa from World War I to the present. Topics include state building, authoritarianism, political economy, the Israeli-Palestinian conflict, and the causes, trajectories, and aftermath of the 2011 Arab uprisings. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 352-0 Global Development (1 Unit)** Exploration of the economic and social changes constituting development, focusing on comparison between the historical experience in Europe and more recent processes in Africa, Asia, and Latin America. SOCIO 317-0 and POLI\_SCI 352-0 are taught together; may not receive credit for both

courses. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 353-0 Politics of Latin America (1 Unit)**

Patterns of socioeconomic development and regime forms in Latin America. Interaction of internal and international economic and political structures and processes.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 354-0 Politics of Southeast Asia (1 Unit)**

Political economy of selected Southeast Asian countries, 1945 to present. Important themes include oligarchy and human rights.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 355-0 Politics of China (1 Unit)**

This course offers an overview of modern China's politics and society. It is divided into three parts. The first part surveys Chinese history from the fall of the Qing dynasty to the end of Mao's era. The second part delves into China's economic reform and its distinct political system that combines high-growth capitalism with single-party rule. The third part focuses on several challenges confronting China and the world as a whole today, including climate change, populism, inequality, nationalism, and technological change. The course equips students with knowledge of China's political landscape as well as key concepts and theories in political science, such as revolution, democracy, and political legitimacy. The geopolitical unit known as China today will be understood through historical, comparative, and global perspectives.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 356-0 Constitutional Challenges in Comparative Perspective (1 Unit)**

Constitutional controversies and resolutions in liberal democracies. Constitutional traditions and governance, rule of law, legitimacy and authority in diverse societies, human rights, social transformation. POLI\_SCI 356-0 and LEGAL\_ST 356-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 358-SA Contemporary South Africa: A Political Economy/**

**Policy Perspective (1 Unit)** Analysis of the political outcomes of South Africa's transition to democracy, democratic consolidation, the state of the South African political economy, and major policy issues, such as gender equality and HIV/AIDS. Restricted to students in Northwestern's South Africa program. *Social Behavioral Sciences Distro Area*

**POLI\_SCI 359-0 Politics of Africa (1 Unit)**

Political structures and behaviour ; power relatoon ; political regimes ; development of modern political systems.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 361-0 Democracy and Autocracy (1 Unit)**

Theories of the emergence and breakdown of democracy as well as of tensions between democratic and autocratic governance in contemporary democratic regimes. Comparisons of case studies in developed and developing countries.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 362-0 Politics of Europe (1 Unit)**

Political development of Europe from the Peace of Westphalia to the European Union. Focus on states and state-making, regime types, economic development, and nationalism.

*Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 363-SA The Political Economy of the European Union (1 Unit)**

The political production, structure, and regulation of economic activity in the EU. Restricted to students in Northwestern's Paris program.

**POLI\_SCI 364-SA France: Politics, Culture, & Society (1 Unit)**

Introduction to French politics in the framework of European integration. Covers French efforts to promote integration and France's role in the international system and adaptation to the EU. Restricted to students in Northwestern's Paris program. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 365-SA Decision Making in the European Union (1 Unit)**

Analysis, by lecture and simulation, of the EU's complicated institutional structure for political decision making. Restricted to students in Northwestern's Paris program.

**POLI\_SCI 366-SA The Dynamics of Law Making in the European Union (1 Unit)**

Examination of the dynamics of law making in the EU and conflict/balance between domestic and regional law. Restricted to students in Northwestern's Paris program.

**POLI\_SCI 368-0 Political Economy of Development (1 Unit)**

Major analytical perspectives of modern political economy seen through concrete problems of development and underdevelopment in the least developed countries. *Social Behavioral Sciences Distro Area*

**POLI\_SCI 369-0 Politics of Post-Soviet Russia (1 Unit)**

Analysis of Russia's political and economic revolutions after the collapse of the Soviet Union. Examines key concepts in comparative politics, such as revolution, regime change, market formation, nationalism, and state building. *Social Behavioral Sciences Distro Area*

**POLI\_SCI 373-0 Chinese Foreign Policy (1 Unit)**

Basic dynamics of Chinese foreign policy toward a variety of countries and regions. *Social Behavioral Sciences Distro Area*

**POLI\_SCI 374-0 Politics of Capitalism (1 Unit)**

Effects of politics on the economy and vice versa, especially in advanced industrial economies. The welfare state, varieties of capitalism, and neoliberalism. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 376-0 Civil Wars (1 Unit)**

Focus on post-Cold War increase in civil wars, including causes and consequences of internal wars, and theories of conflict. Examines recent and contemporary civil wars to illustrate applications of theories and better understand current events. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 377-0 Drugs and Politics (1 Unit)**

This course studies the links between illegal drugs and politics. From the politics of local communities to international public policy, the production, distribution, and consumption of illicit drugs affect individual behavior, local and national institutions, markets, and international relations. The course focuses on North, Central, and South America. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 378-0 America and the World (1 Unit)**

Key debates and developments in the history and politics of American foreign relations. Domestic politics and foreign policy, political culture, interventionism, legal globalization, international institutions. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 379-SA China in Transition: Ideology, Political Economy, Law, and Relations with the US (1 Unit)**

Broad issues confronting China in its

long, tumultuous transition. For students with no background as well as those with extensive prior knowledge of China. Restricted to students in Northwestern's program in China. *Social Behavioral Sciences Distro Area*

**POLI\_SCI 381-SA Political Economy of Contemporary China (1 Unit)**

State capitalism, the role of state-owned enterprises in China's economic development, China as a regulatory state, social consequences, financial reforms. Restricted to students in Northwestern's program in China.

*Social Behavioral Sciences Distro Area*

**POLI\_SCI 382-0 Religion, Law, & Politics: Politics of Religious Diversity (1 Unit)** This course teaches students to think critically, comparatively, and globally about the intersections of religion, law, and politics. It considers how religious, legal, and political traditions intersect and interact in modern states and societies. The course is organized around a set of legal cases and supporting materials in the Teaching Law and Religion Case Study Archive. RELIGION 382-0 taught with POLI\_SCI 382-0; may not receive credit for both. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**POLI\_SCI 383-0 War and Change in International Politics (1 Unit)**

Historical and contemporary forms of international order. Western and non-Eurocentric systems; how international order emerges; whether the post-1945 order will change. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 384-0 International Responses to Mass Atrocities (1 Unit)**

How the international community can respond to mass atrocities and human rights violations. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 388-0 Institutions and Society (1 Unit)** Institutions in a broad societal context. How institutional frameworks apply to government, family, education, and the environment; implications of institutions.

POLI\_SCI 388-0 and SOCIO 288-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**POLI\_SCI 389-0 Understanding Genocide (1 Unit)** Key debates in the comparative study of genocide. Why genocide occurs, why people become killers, how these processes relate to each other. POLI\_SCI 389-0 and SOCIO 379-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**POLI\_SCI 390-0 Special Topics in Political Science (1 Unit)**

Designed for investigation of topics of interest to students and faculty that are not covered by other course offerings. May be repeated for credit with change of topic.

**POLI\_SCI 394-LK Professional Linkage Seminar (1 Unit)**

**POLI\_SCI 395-0 Political Research Seminar (1 Unit)** Required of all political science majors; ordinarily taken during junior or senior year. *Advanced Expression*

**POLI\_SCI 398-1 Senior Thesis Seminar (1 Unit)** Two consecutive quarters (fall and winter) during which students work on their senior theses. Prerequisite: POLI\_SCI 395-0 and admission to the honors program. *Advanced Expression*

**POLI\_SCI 398-2 Senior Thesis Seminar (1 Unit)** Two consecutive quarters (fall and winter) during which students work on their senior theses. Prerequisite: POLI\_SCI 395-0 and admission to the honors program. *Advanced Expression*

**POLI\_SCI 399-0 Independent Study (1 Unit)** Study and research projects carried out under faculty supervision. A written proposal, signed by the professor with whom the student will study, should be submitted to the director of undergraduate studies. Consent of department required.

## Political Science Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The major in political science provides an opportunity for students to learn about politics in a variety of realms and settings. Students are encouraged to begin the major with 200-level courses, which provide a general introduction to subfields of political science, as well as important background for 300-level courses. Majors should choose 200-level courses from at least two subfields: American politics, comparative politics, international relations, and political theory.

While some students choose courses from within one or two subfields, most take a wide variety across different areas. Concentrations are not required. Majors may consult with department advisers, however, to design more customized programs of study. For instance, students might design a course of study around themes such as race, ethnicity, and politics; global transformation; representation and law; social and economic inequalities; conflict and national security; and citizenship studies.

Students planning to major in political science are advised to complete the 200-level gateway courses and at least one 300-level course in political science by the end of sophomore year. Majors should complete their methodology requirement by the end of junior year and before taking the POLI\_SCI 395-0 Political Research Seminar. Students should plan to take POLI\_SCI 395-0 in junior or senior year. Those who plan to pursue honors should take POLI\_SCI 395-0 in junior year.

Course	Title
<b>Major Requirements (12 units)</b>	
3 gateway courses chosen from:	
POLI_SCI 201-0	Introduction to Political Theory
POLI_SCI 220-0	American Government and Politics
POLI_SCI 230-0	Introduction to Law in the Political Arena
POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 250-0	Introduction to Comparative Politics
1 methodology course in political science chosen from:	
POLI_SCI 210-0	Introduction to Empirical Methods in Political Science
POLI_SCI 211-0	Introduction to Interpretive Methods in Political Science
POLI_SCI 212-0	Evaluating Evidence
POLI_SCI 310-0	Methods of Political Inference
POLI_SCI 312-0	Statistical Research Methods
1 Political Research Seminar	
POLI_SCI 395-0	Political Research Seminar
7 additional 300-level courses in political science <sup>1, 2, 3, 4</sup>	

- <sup>1</sup> At most one unit of Chicago Field Studies (chosen from CFS 391-0, CFS 394-0, or CFS 397-0) may substitute for one course.
- <sup>2</sup> At most two units of POLI\_SCI 399-0 may count toward the 300-level requirement for the major.
- <sup>3</sup> Only one additional POLI\_SCI 395-0 credit beyond the one credit required may count towards the 300-level requirement for the major.
- <sup>4</sup> Honors thesis seminars POLI\_SCI 398-1 and POLI\_SCI 398-2 do not count toward the major.

## Notes about substitutions and restrictions:

- A maximum of two courses per quarter from study abroad may count toward the Political Science major. More courses may be accepted toward the major for longer study abroad programs.
- There is no limit to the number of units of Special Topics in Political Science (POLI\_SCI 390-0) that may be applied to the major.
- Courses taken P/N cannot be counted toward the major (this is a Weinberg College rule; for details see Grade Requirements (p. 216)).
- Receiving a 5 on an AP exam (either American Government or Comparative Politics) can place students out of the equivalent 200-level course, but test credit awarded cannot be substituted for the 12 courses required to complete the major. Thus, instead of taking POLI\_SCI 220-0 or POLI\_SCI 250-0, the student must take an additional 300-level course. Students receiving a 5 on the AP exams in American Government and/or Comparative Politics can place out of both equivalent 200-level courses and thus need to take two additional 300-level courses. Students wishing to use their AP credit in this fashion must contact the Director of Undergraduate Studies and place the request.
- For students completing the MMSS major, MATH 385-0 fulfills the POLI\_SCI methodology requirement, and MMSS 311-2 double-counts as a 300-level political science course (for triple major limitations see MMSS Adjunct Major (p. 361)).

## Honors in Political Science

Majors with strong academic records and an interest in pursuing honors should submit an application to the honors program in the spring quarter of their junior year. Interested students should complete at least seven of the courses required for the major, including the methodology and research seminar requirements, before senior year. Accepted students enroll in the two-quarter seminar POLI\_SCI 398-1 & POLI\_SCI 398-2, which provides guidance in writing a senior thesis. These courses do not count toward the major but are required for participation in the honors program. Students must be in residence and able to attend both seminars in person during both the fall and winter quarters when enrolled in the honors program. Students interested in pursuing honors in more than one major are encouraged to pursue interdisciplinary honors.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information see Honors in the Major (p. 222).

## Courses

### American Politics Courses

These courses examine political behavior, power, and politics in American society and in the institutions of US government at the national, state, and local levels.

Course	Title
POLI_SCI 220-0	American Government and Politics
POLI_SCI 230-0	Introduction to Law in the Political Arena
POLI_SCI 320-0	The American Presidency
POLI_SCI 321-0	Urban Politics
POLI_SCI 323-0	Public Opinion and Voting Behavior
POLI_SCI 324-0	Political Parties and Elections
POLI_SCI 325-0	Congress and the Legislative Process
POLI_SCI 326-0	Race and Public Policy
POLI_SCI 327-0	African American Politics
POLI_SCI 328-0	Public Policy
POLI_SCI 329-0	U.S. Environmental Politics
POLI_SCI 331-0	Politics of the Supreme Court
POLI_SCI 332-0	Constitutional Law I
POLI_SCI 333-0	Constitutional Law II: Civil and Political Rights
POLI_SCI 334-0	Latino Politics
POLI_SCI 335-0	Political Psychology
POLI_SCI 336-0	Immigration Politics and Policy
POLI_SCI 337-0	Gender and Politics

### Comparative Politics Courses

Some of these courses concentrate on understanding the politics of specific national systems, while others focus on certain types of political phenomena and make cross-national comparisons.

Course	Title
POLI_SCI 250-0	Introduction to Comparative Politics
POLI_SCI 350-0	Social Movements
POLI_SCI 351-0	Politics of the Middle East
POLI_SCI 352-0	Global Development
POLI_SCI 353-0	Politics of Latin America
POLI_SCI 354-0	Politics of Southeast Asia
POLI_SCI 355-0	Politics of China
POLI_SCI 356-0	Constitutional Challenges in Comparative Perspective
POLI_SCI 358-SA	Contemporary South Africa: A Political Economy/Policy Perspective
POLI_SCI 359-0	Politics of Africa
POLI_SCI 361-0	Democracy and Autocracy
POLI_SCI 362-0	Politics of Europe
POLI_SCI 363-SA	The Political Economy of the European Union
POLI_SCI 364-SA	France: Politics, Culture, & Society
POLI_SCI 365-SA	Decision Making in the European Union
POLI_SCI 366-SA	The Dynamics of Law Making in the European Union
POLI_SCI 368-0	Political Economy of Development
POLI_SCI 369-0	Politics of Post-Soviet Russia
POLI_SCI 373-0	Chinese Foreign Policy
POLI_SCI 374-0	Politics of Capitalism
POLI_SCI 379-SA	China in Transition: Ideology, Political Economy, Law, and Relations with the US
POLI_SCI 381-SA	Political Economy of Contemporary China

POLI_SCI 388-0	Institutions and Society
POLI_SCI 389-0	Understanding Genocide

## International Relations Courses

This field includes the study of major actors and arenas in the world scene, global processes through which cooperation and conflict are managed in the international system, and ways in which change occurs and resources become allocated in the global system.

Course	Title
POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 340-0	International Relations Theory
POLI_SCI 341-0	International Political Economy
POLI_SCI 342-0	International Organizations
POLI_SCI 343-0	Politics of International Law
POLI_SCI 344-0	U.S. Foreign Policy
POLI_SCI 345-0	National Security
POLI_SCI 346-0	European Union in International Affairs
POLI_SCI 347-0	Ethics in International Relations
POLI_SCI 348-0	Globalization
POLI_SCI 349-0	International Environmental Politics
POLI_SCI 376-0	Civil Wars
POLI_SCI 377-0	Drugs and Politics
POLI_SCI 378-0	America and the World
POLI_SCI 382-0	Religion, Law, & Politics: Politics of Religious Diversity
POLI_SCI 383-0	War and Change in International Politics
POLI_SCI 384-0	International Responses to Mass Atrocities

## Political Theory Courses

These courses examine the ideas that inform the thinking of today's citizens, representatives, and political scientists. They are organized by historical periods and conceptual similarity.

Course	Title
POLI_SCI 201-0	Introduction to Political Theory
POLI_SCI 301-0	Classical Political Theory
POLI_SCI 302-0	Subjects, Citizens, Revolutionaries: Early Modern Political Thought
POLI_SCI 303-0	Modernity and Its Discontents
POLI_SCI 304-0	Human Rights Between East and West
POLI_SCI 306-0	American Political Thought
POLI_SCI 307-0	Deportation Law and Politics
POLI_SCI 308-0	Critical Theory and the Study of Politics
POLI_SCI 308-SA	Critical Theory and the Study of Politics
POLI_SCI 309-0	Political Theories of the Rule of Law

## Research Methodology Courses

Courses in this field help students engage in the research they may encounter in their 300 level courses and help prepare students to conduct original research on the causes and consequences of political phenomena. The methodological techniques are often transferable to research problems in government and business.

Course	Title
POLI_SCI 210-0	Introduction to Empirical Methods in Political Science
POLI_SCI 211-0	Introduction to Interpretive Methods in Political Science
POLI_SCI 212-0	Evaluating Evidence

POLI_SCI 310-0	Methods of Political Inference
POLI_SCI 312-0	Statistical Research Methods

## Seminars and Independent Study

Course	Title
POLI_SCI 390-0	Special Topics in Political Science
POLI_SCI 394-LK	Professional Linkage Seminar
POLI_SCI 395-0	Political Research Seminar
POLI_SCI 398-1 & POLI_SCI 398-2	Senior Thesis Seminar and Senior Thesis Seminar
POLI_SCI 399-0	Independent Study

## Political Science Minor

The minor in political science offers students the opportunity to acquire a foundation in the discipline as well as significant exposure to advanced courses.

Students may want to choose courses that complement and deepen their major area of study. For example, economics majors may want to focus on political economy courses, history majors may study contemporary politics in their area of focus, and philosophy majors may study political theory. Alternatively, students can choose to broaden their knowledge of political science in areas unrelated to their majors. Students should consult with a department advisor to develop an individual program of study.

Course	Title
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### Minor Requirements (6 units)

At least two 200-level courses chosen from:

POLI_SCI 201-0	Introduction to Political Theory
POLI_SCI 220-0	American Government and Politics
POLI_SCI 230-0	Introduction to Law in the Political Arena
POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 250-0	Introduction to Comparative Politics

Four additional political science courses, including at least three at the 300 level<sup>1</sup>

<sup>1</sup> At most one unit of Chicago Field Studies (chosen from CFS 391-0, CFS 394-0, or CFS 397-0) may substitute for one course.

## Notes about substitutions and restrictions:

- At most one course from study abroad may count toward the minor.
- There is no limit to the number of units of Special Topics in Political Science (POLI\_SCI 390-0) that may be applied to the minor.
- At most two units of POLI\_SCI 399-0 Independent Study may count towards the minor.
- Courses taken P/N cannot be counted toward the minor (this is a Weinberg College rule; for details see Grade Requirements (p. 216)).
- Receiving a 5 on an AP exam (either American Government or Comparative Politics) can place students out of the equivalent 200-level course, but test credit awarded cannot be substituted for the 6 courses required to complete the minor. Thus, instead of taking POLI\_SCI 220-0 or POLI\_SCI 250-0, the student must take an additional 300-level course. Students receiving 5's on the AP exams in both American Government and Comparative Politics can place out of both equivalent 200-level courses and thus need to take two additional 300-level courses. Students wishing to use their AP credit

in this fashion must contact the Director of Undergraduate Studies to place the request.

## Courses

### American Politics Courses

These courses examine political behavior, power, and politics in American society and in the institutions of US government at the national, state, and local levels.

Course	Title
POLI_SCI 220-0	American Government and Politics
POLI_SCI 230-0	Introduction to Law in the Political Arena
POLI_SCI 320-0	The American Presidency
POLI_SCI 321-0	Urban Politics
POLI_SCI 323-0	Public Opinion and Voting Behavior
POLI_SCI 324-0	Political Parties and Elections
POLI_SCI 325-0	Congress and the Legislative Process
POLI_SCI 326-0	Race and Public Policy
POLI_SCI 327-0	African American Politics
POLI_SCI 328-0	Public Policy
POLI_SCI 329-0	U.S. Environmental Politics
POLI_SCI 331-0	Politics of the Supreme Court
POLI_SCI 332-0	Constitutional Law I
POLI_SCI 333-0	Constitutional Law II: Civil and Political Rights
POLI_SCI 334-0	Latino Politics
POLI_SCI 335-0	Political Psychology
POLI_SCI 336-0	Immigration Politics and Policy

### Comparative Politics Courses

Some of these courses concentrate on understanding the politics of specific national systems, while others focus on certain types of political phenomena and make cross-national comparisons.

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POLI_SCI 352-0	Global Development
POLI_SCI 353-0	Politics of Latin America
POLI_SCI 354-0	Politics of Southeast Asia
POLI_SCI 355-0	Politics of China
POLI_SCI 356-0	Constitutional Challenges in Comparative Perspective
POLI_SCI 358-SA	Contemporary South Africa: A Political Economy/Policy Perspective
POLI_SCI 359-0	Politics of Africa
POLI_SCI 361-0	Democracy and Autocracy
POLI_SCI 362-0	Politics of Europe
POLI_SCI 363-SA	The Political Economy of the European Union
POLI_SCI 364-SA	France: Politics, Culture, & Society
POLI_SCI 365-SA	Decision Making in the European Union
POLI_SCI 366-SA	The Dynamics of Law Making in the European Union
POLI_SCI 368-0	Political Economy of Development
POLI_SCI 369-0	Politics of Post-Soviet Russia
POLI_SCI 373-0	Chinese Foreign Policy
POLI_SCI 374-0	Politics of Capitalism
POLI_SCI 379-SA	China in Transition: Ideology, Political Economy, Law, and Relations with the US
POLI_SCI 381-SA	Political Economy of Contemporary China

POLI_SCI 388-0	Institutions and Society
POLI_SCI 389-0	Understanding Genocide

### International Relations Courses

This field includes the study of major actors and arenas in the world scene, global processes through which cooperation and conflict are managed in the international system, and ways in which change occurs and resources become allocated in the global system.

Course	Title
POLI_SCI 240-0	Introduction to International Relations
POLI_SCI 340-0	International Relations Theory
POLI_SCI 341-0	International Political Economy
POLI_SCI 342-0	International Organizations
POLI_SCI 343-0	Politics of International Law
POLI_SCI 344-0	U.S. Foreign Policy
POLI_SCI 345-0	National Security
POLI_SCI 346-0	European Union in International Affairs
POLI_SCI 347-0	Ethics in International Relations
POLI_SCI 348-0	Globalization
POLI_SCI 349-0	International Environmental Politics
POLI_SCI 376-0	Civil Wars
POLI_SCI 377-0	Drugs and Politics
POLI_SCI 378-0	America and the World
POLI_SCI 382-0	Religion, Law, & Politics: Politics of Religious Diversity
POLI_SCI 383-0	War and Change in International Politics
POLI_SCI 384-0	International Responses to Mass Atrocities

### Political Theory Courses

These courses examine the ideas that inform the thinking of today's citizens, representatives, and political scientists. They are organized by historical periods and conceptual similarity.

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POLI_SCI 302-0	Subjects, Citizens, Revolutionaries: Early Modern Political Thought
POLI_SCI 303-0	Modernity and Its Discontents
POLI_SCI 304-0	Human Rights Between East and West
POLI_SCI 306-0	American Political Thought
POLI_SCI 307-0	Deportation Law and Politics
POLI_SCI 308-0	Critical Theory and the Study of Politics
POLI_SCI 308-SA	Critical Theory and the Study of Politics
POLI_SCI 309-0	Political Theories of the Rule of Law

### Research Methodology Courses

Courses in this field help students engage in the research they may encounter in their 300 level courses and help prepare students to conduct original research on the causes and consequences of political phenomena. The methodological techniques are often transferable to research problems in government and business.

Course	Title
POLI_SCI 210-0	Introduction to Empirical Methods in Political Science
POLI_SCI 211-0	Introduction to Interpretive Methods in Political Science
POLI_SCI 212-0	Evaluating Evidence

POLI_SCI 310-0	Methods of Political Inference
POLI_SCI 312-0	Statistical Research Methods

## Seminars and Independent Study

Course	Title
POLI_SCI 390-0	Special Topics in Political Science
POLI_SCI 394-LK	Professional Linkage Seminar
POLI_SCI 395-0	Political Research Seminar
POLI_SCI 398-1 & POLI_SCI 398-2	Senior Thesis Seminar and Senior Thesis Seminar
POLI_SCI 399-0	Independent Study

## Portuguese

Language courses and a minor in Portuguese Language and Lusophone Cultures (p. 437) is offered by the Department of Spanish and Portuguese (p. 430).

## Psychology

[psychology.northwestern.edu](http://psychology.northwestern.edu)

The study of psychology includes a wide range of topics in the natural and social sciences. It provides students an opportunity to increase their understanding of themselves and other people as developing individuals, biological organisms, and participants in society. Because of the strong research orientation of the department, it also provides an understanding of how research is done and an opportunity to participate directly in research.

A major in psychology may lead in various directions after graduation. Course offerings span the areas of cognition, biopsychology, clinical psychology, health psychology, developmental psychology, and social psychology. Psychology is a useful major for students planning careers in education, medicine, law, or management. It provides knowledge about human behavior and about research methods and data analysis that is valuable in business, the helping professions, and many other occupations. Graduate study may prepare a student for a career as an academic, clinical, industrial, or other kind of psychologist.

At the graduate level, the department recognizes several specialties with programs leading to the PhD. Though opportunities for study and research are available to undergraduates in all of these areas, there is only one undergraduate psychology major. Its requirements are designed to give every student a mastery of the basic methods and a balanced exposure to different aspects of psychology. Beyond that, students are encouraged to follow their interests in regular courses and in independent study. Extensive laboratory facilities and research experiences are available.

## Programs of Study

- Psychology Major (p. 411)
- Psychology Minor (p. 412)

**PSYCH 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PSYCH 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written

communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PSYCH 110-0 Introduction to Psychology (1 Unit)** A survey course reviewing primary psychological research and theories of human behavior. Laboratory experience exposes students to psychology as a research science. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 201-0 Statistical Methods in Psychology (1 Unit)** Measurement; descriptive statistics; probability and sampling; T-test, ANOVA, correlation, and regression. Prerequisite: some college mathematics recommended. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**PSYCH 205-0 Research Methods in Psychology (1 Unit)** Methods of psychological research; experimental design; reliability and validity; review and application of statistics; execution and reporting of psychological research. Prerequisite: PSYCH 201-0. *Advanced Expression Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**PSYCH 213-0 Social Psychology (1 Unit)** Psychological processes underlying social behavior; topics include social cognition, attraction, aggression, prejudice, and behavior in groups. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 215-0 Psychology of Personality (1 Unit)** Nature of personality and its development. Modern theoretical interpretations. Biological and social bases of individual differences. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 221-0 Introduction to Neuroscience (1 Unit)** Designed for students with no prior coursework in neuroscience or biology. Neurophysiology and neuroanatomy; neuroscience of perception, emotion, morality, memory, mental illness, and consciousness. Neuroscience majors may not take PSYCH 221-0. Students may not take PSYCH 221-0 after they have taken NEUROSCI 202-0. *Natural Sciences Distro Area Natural Sciences Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 228-0 Cognitive Psychology (1 Unit)** Introduction to research into mental processes such as memory, reasoning, problem solving, and decision making. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 244-0 Developmental Psychology (1 Unit)** Development of cognitive, social, and other psychological functions. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 248-0 Health Psychology (1 Unit)** Overview of research in health psychology. Stress and coping, biological systems affected by stress, social support and health, health behaviors, adjustment to chronic illnesses. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 249-0 Buddhist Psychology (1 Unit)** Buddhist and scientific psychological views of mind and behavior; meditation techniques. Prerequisite: PSYCH 110-0. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**PSYCH 303-0 Psychopathology (1 Unit)** Understanding the nature of psychological, emotional, and behavioral disorders. Emphasis on current evidence regarding causes and characteristics of these disorders.

Prerequisite: PSYCH 110-0.

*Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 306-0 Introduction to Clinical Psychology (1 Unit)** Definition and history of clinical psychology, personality theory in clinical psychology, diagnosis and classification of disorders, assessment, psychotherapy, and ethical issues. Prerequisite: PSYCH 303-0. *Social Behavioral Sciences Distro Area*

**PSYCH 308-0 Cognitive Behavior Therapy (1 Unit)** Scientific foundations of cognitive behavior therapy for a wide range of disorders. Focus on the rationale for different treatments and evidence of efficacy and process. Comparisons with other scientifically validated treatments. Prerequisite: PSYCH 303-0. *Social Behavioral Sciences Distro Area*

**PSYCH 310-0 Special Topics in Social/Clinical/Personality (1 Unit)**

Topic to be announced. Prerequisites vary. May be repeated for credit with different topic.

**PSYCH 311-0 Psychology of Attitudes (1 Unit)** Survey of social psychological research on attitudes; focus on the formation of attitudes, the relationship between attitudes and behavior, and attitude change.

Prerequisite: PSYCH 213-0. *Social Behavioral Sciences Distro Area*

**PSYCH 313-0 Relationship Science (1 Unit)** Social-psychological analysis of close relationships, with an emphasis on romantic relationships. Interpersonal processes associated with relationship formation, development, and dissolution. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 317-0 The Holocaust: Psychological Themes & Perspectives (1 Unit)** This course will be an exploration of how particular psychological theories and concepts can inform our understanding of the events of the Holocaust at both a group and individual level. Material from the fields of Social and Clinical Psychology will be a particular focus of the course. Prerequisite: PSYCH 110-0. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 324-0 Perception (1 Unit)**

Human perception, particularly vision but also hearing, taste, smell, and touch. Biological foundations, development, and disorders of perception. The senses in everyday life.

Prerequisite: PSYCH 110-0.

*Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Natural Sciences Foundational Discipline Social Behavioral Sciences Distro Area*

**PSYCH 327-0 Brain and Cognition (1 Unit)** Neural bases of cognitive processing with emphases on neuroimaging approaches in the areas of encoding, perception, attention, memory, language, reading, motor control, and executive functioning. Taught with CSD 303-0; may not receive credit for both courses. *Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Social Behavioral Sciences Distro Area*

**PSYCH 328-0 Brain Damage and the Mind (1 Unit)** Survey of human cognition as studied via investigations of brain damage and brain-imaging techniques. Prerequisite: PSYCH 110-0, PSYCH 221-0, or COG\_SCI 210-0. *Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Natural Sciences Foundational Discipline Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 330-0 Special Topics in Cognition/Neuroscience (1 Unit)** Topic to be announced. Prerequisites vary. May be repeated for credit with different topic.

**PSYCH 333-0 Psychology of Thinking (1 Unit)**

Research methods and recent experimental findings for types of human thinking. Students conduct original research.

Prerequisite: PSYCH 228-0.

*Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 336-0 Consciousness (1 Unit)** Examines how psychologists, neuroscientists, computer scientists, and physicists have tackled fundamental questions about consciousness using empirical and theoretical methods. Prerequisites: a course in cognition and/or neuroscience, or instructor permission based on a strong background in neurobiology and/or physics; PSYCH 205-0 strongly recommended. *Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Social Behavioral Sciences Distro Area*

**PSYCH 340-0 Psychology and Law (1 Unit)**

Examines the application of psychology to law, including topics such as the insanity defense, criminal profiling, eyewitness testimony, and interrogation.

Prerequisite: PSYCH 110-0. Taught with LEGAL\_ST 350-0; may not receive credit for both courses.

*Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**PSYCH 341-0 Positive Psychology: The Science of Well-Being (1 Unit)**

Key developments in the field of positive psychology. Eudaimonic and hedonic wellbeing, mindfulness and flow, importance of social connections, emotional resilience, positive institutions. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area*

**PSYCH 343-0 Psychology of Beauty (1 Unit)** Theory, methodology, and empirical data related to the psychological impact of human beauty. Emphasis on both cultural and evolutionary perspectives. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area*

**PSYCH 344-0 Cultural Psychology (1 Unit)** Introduction to concepts and empirical methods used to study how culture shapes mind, brain, and behavior over multiple time scales, including over generations and the lifespan and across situational contexts. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area*

**PSYCH 345-0 Presenting Ideas & Data (1 Unit)** Understanding principles of cognitive psychology, data visualization, and graphic design to present ideas and data in an engaging, clear, and memorable manner. PSYCH 345-0 and COG\_SCI 345-0 are taught together; may not receive credit for both courses. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**PSYCH 348-0 Psychology of Sex and Gender Differences (1 Unit)**

Examination of sex differences and similarities. Evaluation of explanations for differences. Review of how gender affects achievement, relationships, and mental health. Prerequisite: PSYCH 110-0. *Social Behavioral Sciences Distro Area*

**PSYCH 350-0 Special Topics in Psychology (1 Unit)**

Topic to be announced. Prerequisites vary. May be repeated for credit with different topic.

**PSYCH 360-0 Personality Research (1 Unit)** Research in personality, with emphasis on experimental approaches and methods. Basic concepts of test reliability and validity. Students conduct original research. Prerequisites: PSYCH 205-0, PSYCH 215-0. *Social Behavioral Sciences Distro Area*

**PSYCH 364-0 Social and Personality Development (1 Unit)** Research methods, theories, and facts relating to the development and modification of attitudes and behavior. Prerequisites: PSYCH 205-0; and PSYCH 213-0, PSYCH 215-0, or PSYCH 244-0. *Social Behavioral Sciences Distro Area*

**PSYCH 366-0 Stereotyping & Prejudice (1 Unit)** Analysis of the causes and consequences of stereotyping and prejudice, as well as methods used to study these issues. Students conduct original research. Prerequisites: PSYCH 213-0, PSYCH 205-0. *Social Behavioral Sciences Distro Area*

**PSYCH 367-0 Child Psychopathology (1 Unit)** Major forms of psychopathology present during childhood, including disorders exclusive to childhood and those that may appear during any developmental period. Developmental models of the etiology and course of major psychopathologies. Prerequisites: PSYCH 205-0; PSYCH 244-0 or PSYCH 303-0. *Social Behavioral Sciences Distro Area*

**PSYCH 369-0 Psychological Tests & Measures (1 Unit)** Explores the science of psychological assessment, including its history, test construction and evaluation, and common measures of personality, psychopathology, and ability. Students create and evaluate their own psychological measures. Prerequisites: PSYCH 205-0; PSYCH 213-0, PSYCH 215-0, or PSYCH 303-0. *Social Behavioral Sciences Distro Area*

**PSYCH 370-0 Cognitive Development (1 Unit)** Cognitive development in infancy, childhood, and adolescence. Focus on theoretical explanations for cognitive change and development in core domains, including language, space, number, time, and social relations. Prerequisites: PSYCH 205-0; PSYCH 244-0 or PSYCH 228-0. *Social Behavioral Sciences Distro Area*

**PSYCH 372-0 Language and Cognition (1 Unit)** Exposure to original research and theoretical perspectives on language and its relation to thought and behavior. Critical analysis of theories and methods. Topics may vary. Prerequisites: PSYCH 205-0; and PSYCH 228-0 or COG\_SCI 211-0. *Social Behavioral Sciences Distro Area*

#### **PSYCH 373-0 Decision Making (1 Unit)**

Human decision making from both descriptive and prescriptive perspectives. Theories and models of decision making applied to a variety of contexts.

Prerequisites: PSYCH 205-0, PSYCH 228-0.

*Social Behavioral Sciences Distro Area*

**PSYCH 374-0 Human Memory (1 Unit)** Scientific study of human memory, including memory systems of the brain, amnesia, remembering, forgetting, encoding, consolidation, memory suppression, and memory distortion. Emphasizes original research reports in cognitive neuroscience. Prerequisites: Psych 205 AND either Psych 228, Psych 328, or Psych 336 or consent of instructor. *Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Social Behavioral Sciences Distro Area*

#### **PSYCH 378-0 Images of Cognition (1 Unit)**

Study of brain processes underlying cognition. Analysis of brain structure and function. Introduction to imaging techniques including fMRI, PET, and ERP.

Prerequisites: PSYCH 205-0; a course in cognition and/or neuroscience (e.g., PSYCH 221-0, PSYCH 228-0, PSYCH 320-0, PSYCH 328-0; COG\_SCI 210-0) or consent of instructor.

*Interdisciplinary Distro - See Rules (p. 216) Natural Sciences Distro Area Social Behavioral Sciences Distro Area*

#### **PSYCH 380-0 Advanced Statistics & Experimental Design (1 Unit)**

Advanced topics in research design and analysis of data. Focus on

both theory and applications. Prerequisites: PSYCH 205-0; 2 200-level mathematics courses. *Formal Studies Distro Area*

**PSYCH 381-0 Children & the Law (1 Unit)** Examines from a developmental perspective research on children's involvement in the legal system as decision makers, witnesses, victims, and perpetrators. Taught with LEGAL\_ST 381-0; may not receive credit for both courses. Prerequisites: PSYCH 205-0, PSYCH 244-0. *Social Behavioral Sciences Distro Area*

**PSYCH 383-0 Psychology and Food (1 Unit)** Social, cultural, cognitive, evolutionary, and biological factors that influence food choice and consumption. Conducting and evaluating research on eating behavior. Students conduct original research. Prerequisite: PSYCH 205-0. *Social Behavioral Sciences Distro Area*

**PSYCH 387-0 Consumer Psychology and Marketing Research (1 Unit)** Application of psychological theories, findings, and methodologies to marketing research questions and problems. Students conduct a marketing research project for an actual client. Prerequisite: PSYCH 205-0. *Social Behavioral Sciences Distro Area*

#### **PSYCH 390-0 Advanced Seminar in Personality, Clinical, or Social Psychology (1 Unit)**

Discussion and critical analysis of research methods and findings in an area of personality, clinical, and/or social psychology. Topics vary. May be repeated for credit with different topic.

Prerequisite: PSYCH 205-0; additional prerequisites may apply.

#### **PSYCH 391-0 Advanced Seminar in Cognition or Neuroscience (1 Unit)**

Discussion and critical analysis of research methods and findings in an area of cognitive psychology and/or neuroscience. Topics vary. May be repeated for credit with different topic. Prerequisite: PSYCH 205-0; additional prerequisites may apply.

**PSYCH 392-0 Advanced Seminar in Psychology (1 Unit)** Discussion and critical analysis of research methods and findings in psychology. Interdisciplinary focus, often spanning natural and social science aspects of psychology. Topics vary. May be repeated for credit with different topic. Prerequisite: PSYCH 205-0; additional prerequisites may apply.

**PSYCH 397-1 Advanced Supervised Research 1 (1 Unit)** Design, implementation, and reporting of a psychology research project.

Prerequisites: PSYCH 205-0 and consent of instructor; PSYCH 397-2 must be taken with the same professor as PSYCH 397-1. Weinberg College limits on 398 and 399 enrollments also apply to 397.

**PSYCH 397-2 Advanced Supervised Research 2 (1 Unit)** Design, implementation, and reporting of a psychology research project. Prerequisites: PSYCH 205-0 and consent of instructor; PSYCH 397-2 must be taken with the same professor as PSYCH 397-1. Weinberg College limits on 398 and 399 enrollments also apply to 397.

**PSYCH 398-1 Senior Thesis Seminar (1 Unit)** Open only to students pursuing departmental honors. They must apply for admission in spring quarter of junior year.

**PSYCH 398-2 Senior Thesis Seminar (1 Unit)** Open only to students pursuing departmental honors. They must apply for admission in spring quarter of junior year.

**PSYCH 398-3 Senior Thesis Seminar (1 Unit)** Open only to students pursuing departmental honors. They must apply for admission in spring quarter of junior year.

**PSYCH 399-0 Independent Study (1 Unit)** Consent of instructor required. Generally limited to juniors and seniors. See department requirements for eligibility.

# Psychology Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

Course	Title
<b>Department Courses (11 units)</b>	
<i>3 core courses:</i>	
PSYCH 110-0	Introduction to Psychology
PSYCH 201-0	Statistical Methods in Psychology (or approved substitute)
PSYCH 205-0	Research Methods in Psychology
<i>8 additional courses:</i>	
At least 2 must be personality, clinical, or social psychology (PSYCH courses numbered 212-219, 300-319, 360-369, 390). See list below.	
At least 2 must be cognitive psychology or neuroscience (PSYCH courses numbered 220-239, 320-339, 370-379, 391, or approved COG SCI courses). See list below.	
At least 1 must be cross-cutting or integrative (PSYCH courses numbered 240-259, 340-359, 380-389, 392). See list below.	
At least 1 must be upper-level research (PSYCH courses numbered 360-392, 397-2, 398-1,2,3). See list below.	
At least 2 must be at the 200 level; COG SCI 210-0 and COG SCI 211-0 may count toward this requirement.	
At least 3 must be at the 300 level.	
A course may count toward more than one of these categories, but the total number of courses must be at least 8.	

## Related Courses (5 units)

2 quantitative courses: EITHER two 200-level Mathematics courses OR one 200-level Mathematics course and one advanced Statistics course (STAT 232 or higher)

### 3 additional units of credit chosen from the following:

Any 200-level mathematics course	
COG SCI 202-0	Evaluating Evidence
COG SCI 207-0	Introduction to Cognitive Modeling
COMP SCI 110-0	Introduction to Computer Programming
COMP SCI 111-0	Fundamentals of Computer Programming
COMP SCI 130-0	Tools and Technology of the World-Wide Web
COMP SCI 150-0	Fundamentals of Computer Programming 1.5
PHIL 327-0	Philosophy of Psychology
Any statistics course at the 232 level or higher	
Any course outside of psychology and cognitive science counting toward the WCAS Area I natural sciences requirement	
AP credits in biology, chemistry, environmental science, and physics	
With department consent, PSYCH 380-0 may count as a related course	

- First-Year Seminars, College Seminars, and First-Year Writing Seminars do not count toward the major.
- Only 1 quarter total of PSYCH 397-1 or PSYCH 399-0 may count toward the major. Students may not count both courses.
- Only 1 quarter total of PSYCH 397-2 or PSYCH 398-x may count toward the major. Students may not count both courses.
- See Weinberg College rules about Independent Study and Undergraduate Seminars (p. 222) for further restrictions on

enrollments in PSYCH 398-1, PSYCH 398-2, PSYCH 398-3, and PSYCH 399-0; these also apply to PSYCH 397-1 and PSYCH 397-2.

- For students with an adjunct major in MMSS: MATH 385-0 Probability and Statistics for MMSS counts in place of PSYCH 201-0 (for triple major limitations see MMSS Adjunct Major (p. 361)); the five related courses for the Psychology Major are fulfilled by MATH 285-1, MATH 285-2, MATH 285-3, MATH 386-1, and MATH 386-2.

# Personality, Clinical, or Social Psychology Courses

Course	Title
PSYCH 213-0	Social Psychology
PSYCH 215-0	Psychology of Personality
PSYCH 303-0	Psychopathology
PSYCH 306-0	Introduction to Clinical Psychology
PSYCH 308-0	Cognitive Behavior Therapy
PSYCH 310-0	Special Topics in Social/Clinical/Personality
PSYCH 311-0	Psychology of Attitudes
PSYCH 313-0	Relationship Science
PSYCH 317-0	The Holocaust: Psychological Themes & Perspectives
PSYCH 360-0	Personality Research
PSYCH 364-0	Social and Personality Development
PSYCH 366-0	Stereotyping & Prejudice
PSYCH 367-0	Child Psychopathology
PSYCH 369-0	Psychological Tests & Measures
PSYCH 390-0	Advanced Seminar in Personality, Clinical, or Social Psychology

# Cognitive Psychology or Neuroscience Courses

Course	Title
PSYCH 221-0	Introduction to Neuroscience
PSYCH 228-0	Cognitive Psychology
PSYCH 324-0	Perception
PSYCH 327-0	Brain and Cognition
PSYCH 328-0	Brain Damage and the Mind
PSYCH 330-0	Special Topics in Cognition/Neuroscience
PSYCH 333-0	Psychology of Thinking
PSYCH 336-0	Consciousness
PSYCH 370-0	Cognitive Development
PSYCH 372-0	Language and Cognition
PSYCH 373-0	Decision Making
PSYCH 374-0	Human Memory
PSYCH 378-0	Images of Cognition
PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience
COG SCI 210-0	Language and the Brain
COG SCI 211-0	Learning, Representation & Reasoning

# Cross-Cutting or Integrative Courses

Course	Title
PSYCH 244-0	Developmental Psychology
PSYCH 248-0	Health Psychology
PSYCH 249-0	Buddhist Psychology
PSYCH 340-0	Psychology and Law
PSYCH 341-0	Positive Psychology: The Science of Well-Being

PSYCH 343-0	Psychology of Beauty
PSYCH 344-0	Cultural Psychology
PSYCH 345-0	Presenting Ideas & Data
PSYCH 348-0	Psychology of Sex and Gender Differences
PSYCH 350-0	Special Topics in Psychology
PSYCH 380-0	Advanced Statistics & Experimental Design
PSYCH 381-0	Children & the Law
PSYCH 383-0	Psychology and Food
PSYCH 387-0	Consumer Psychology and Marketing Research
PSYCH 392-0	Advanced Seminar in Psychology

## Upper-level Research Courses

Course	Title
PSYCH 360-0	Personality Research
PSYCH 364-0	Social and Personality Development
PSYCH 366-0	Stereotyping & Prejudice
PSYCH 367-0	Child Psychopathology
PSYCH 369-0	Psychological Tests & Measures
PSYCH 370-0	Cognitive Development
PSYCH 372-0	Language and Cognition
PSYCH 373-0	Decision Making
PSYCH 374-0	Human Memory
PSYCH 378-0	Images of Cognition
PSYCH 380-0	Advanced Statistics & Experimental Design
PSYCH 381-0	Children & the Law
PSYCH 383-0	Psychology and Food
PSYCH 387-0	Consumer Psychology and Marketing Research
PSYCH 390-0	Advanced Seminar in Personality, Clinical, or Social Psychology
PSYCH 391-0	Advanced Seminar in Cognition or Neuroscience
PSYCH 392-0	Advanced Seminar in Psychology
PSYCH 397-2	Advanced Supervised Research 2
PSYCH 398-1	Senior Thesis Seminar
PSYCH 398-2	Senior Thesis Seminar
PSYCH 398-3	Senior Thesis Seminar

## Honors in Psychology

Majors with strong academic records and an interest in pursuing honors should submit an application in spring of junior year. Course grades and research experience are both considered in selecting participants. Students typically enroll in PSYCH 398-1 in fall, PSYCH 398-2 in winter, and PSYCH 398-3 in spring of senior year and carry out a year-long research project; one Senior Thesis Seminar credit may count toward requirements for the major. The senior thesis is a report on the research project.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information see the department website (<https://www.psychology.northwestern.edu/undergraduate/research/honors-in-psychology.html>) and Honors in the Major (p. 222).

## Psychology Minor

The minor in psychology reflects the view that the undergraduate study of psychology should combine a methodological core with breadth of content. The minor therefore requires the introductory course (PSYCH 110-0 Introduction to Psychology), the two central

methods courses (PSYCH 201-0 Statistical Methods in Psychology and PSYCH 205-0 Research Methods in Psychology), and at least one course from each of the two main content areas defined for the major. Note that First-Year Seminars, College Seminars, and First-Year Writing Seminars do not count towards the minor. **In addition to the courses specifically listed below, all other psychology department courses numbered 200-391 can also count toward the 4 additional courses for the minor.**

Course	Title
<b>Minor Requirements (7 units)</b>	
<i>3 core courses:</i>	
PSYCH 110-0	Introduction to Psychology
PSYCH 201-0	Statistical Methods in Psychology (or approved substitute)
PSYCH 205-0	Research Methods in Psychology
<i>4 additional courses:</i>	
At least 1 personality, clinical, or social psychology course from: <sup>1</sup>	
PSYCH 213-0	Social Psychology
PSYCH 215-0	Psychology of Personality
PSYCH 303-0	Psychopathology
PSYCH 310-0	Special Topics in Social/Clinical/Personality
PSYCH 313-0	Relationship Science
PSYCH 317-0	The Holocaust: Psychological Themes & Perspectives
PSYCH 364-0	Social and Personality Development
PSYCH 367-0	Child Psychopathology
At least 1 cognitive psychology or neuroscience course from: <sup>1</sup>	
PSYCH 221-0	Introduction to Neuroscience
PSYCH 228-0	Cognitive Psychology
PSYCH 324-0	Perception
PSYCH 327-0	Brain and Cognition
PSYCH 328-0	Brain Damage and the Mind
PSYCH 330-0	Special Topics in Cognition/Neuroscience
PSYCH 336-0	Consciousness
PSYCH 370-0	Cognitive Development
COG_SCI 210-0	Language and the Brain
COG_SCI 211-0	Learning, Representation & Reasoning
At least 1 200-level psychology department course <sup>2</sup>	
At least 2 300-level psychology department courses <sup>3</sup>	

<sup>1</sup> A course may count toward more than one of these categories, but the total number of additional courses must be at least 4.

<sup>2</sup> Or COG\_SCI 210-0 Language and the Brain or COG\_SCI 211-0 Learning, Representation & Reasoning.

<sup>3</sup> May only count one quarter of EITHER PSYCH 399-0 Independent Study or PSYCH 397-1 Advanced Supervised Research 1. May not count both courses toward the minor.

## Religious Studies

[religious-studies.northwestern.edu](http://religious-studies.northwestern.edu)

The Department of Religious Studies offers undergraduates from across Northwestern the opportunity to study religions as historical and cultural phenomena. This includes the scholarly exploration of religious traditions, histories, cultures, beliefs, practices, sacred texts, sacred stories, and material productions from around the world in their institutional as well as noninstitutional ("on the ground") forms. The department's approach is fundamentally multidisciplinary, drawing from a variety of fields and critical perspectives: anthropology, history,

philosophy, ethics, sociology, and literary and cultural studies, among others.

The wide variety of undergraduate courses range from large introductory classes to advanced seminars, and there are also independent studies and a senior thesis program for qualified students. The courses cover aspects of Buddhism, Hinduism, Christianity, Islam, Judaism, African American and Native American religions, new religious movements, and religion and culture in America. Several courses are structured comparatively or thematically and address religious ideas and phenomena across cultures and contexts.

The department offers a major and minor in religious studies and a minor in Catholic studies.

In consultation with a department adviser, students majoring in religious studies select one of four concentrations:

- Global study of religion in comparative perspective
- Religion, health, and medicine
- Religion, law, and politics
- Religion, sexuality, and gender

The concentrations are designed to complement academic interests and enhance professional goals.

The minor in religious studies provides a balanced set of departmental courses, including work on general theories of religion and on the historical development of religions and their social manifestations. In the interdisciplinary minor in Catholic studies, students take courses from both religious studies and other departments and choose an area of focus within Catholic studies.

## Programs of Study

- Religious Studies Major (p. 415)
- Religious Studies Minor (p. 416)
- Catholic Studies Minor (p. 416)

**RELIGION 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**RELIGION 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**RELIGION 170-0 Introduction to the Study of Religion (1 Unit)** Introduces students to foundational themes, categories, content, and modes of analysis for studying religion. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 172-0 Introduction to Religion, Media, and Culture (1 Unit)** Integrating multimedia modes of learning and engaging students in skill-developing mediamaaking assignments, this course offers undergraduates an introduction to studying the phenomena of religion in relationship to dynamics of media, society, and culture. No prerequisites required. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 173-0 Religion, Medicine & Suffering in the West (1 Unit)** Examination of religious healing ceremonies and Christian perspectives

on pain and suffering in light of the meaning of physical pain in people's everyday lives. *Ethics Values Distro Area*

**RELIGION 200-0 Introduction to Hinduism (1 Unit)** Unity and diversity of Hindu mythology, beliefs, and practices from ancient times to the present. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 210-0 Introduction to Buddhism (1 Unit)** The Buddha's life and teachings, traditions that developed from these teachings, and systems of meditation, rituals, and ethics. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 220-0 Introduction to Hebrew Bible (1 Unit)** Critical introduction to the Hebrew Bible: its history, content, and cultural influence, as well as the sociopolitical history of ancient Israel. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 221-0 Introduction to the New Testament (1 Unit)** Beginning, development, and content of the New Testament; its Jewish and Hellenistic environment. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 230-0 Introduction to Judaism (1 Unit)** Main concepts in the theology of Judaism, main rituals and customs, and main institutions. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 240-0 Introduction to Christianity (1 Unit)** Doctrine, worship, and institutions in the various branches of Christianity. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 250-0 Introduction to Islam (1 Unit)** Principal beliefs and practices of Muslims set against the historic development of the faith. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 262-0 Introduction to Black Religions: The North American Experience (1 Unit)** Introduces students to the variety of Black religions that developed during and after the Atlantic slave trade up to the present. Explores these traditions as continuities/changes of West African religious cosmologies. Examines the interplay between religion, politics, and the constructions of racial identities within various forms of Christianity, Islam, and other expressive cultures. RELIGION 262-0 and BLK\_ST 262-0 are taught together; may not receive credit for both. *Historical Studies Distro Area Historical Studies Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**RELIGION 264-0 American Religious History from 1865 to the Great Depression (1 Unit)** Topics include urban religion, African American churches, Christians and foreign policy, immigrant religion, the spiritual crisis of the 1920s, and Pentecostalism. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 265-0 American Religious History from World War II to the Present (1 Unit)** Religion and the making of contemporary America, including Cold War religion, the Black Gods of the Great Migration, the rise of the Christian Right, and modern American Catholicism and Judaism. *Ethics Values Distro Area Historical Studies Distro Area Historical Studies Foundational Discipline Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 270-0 Introduction to Theology (1 Unit)** Theology as an academic discipline with a long history of asking fundamental questions about religious experience, texts, practices, and ideas in dialogue with thinkers past and present. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 271-0 Theology of Love (1 Unit)** The concept of love from theological, historical, philosophical, and biblical perspectives. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 272-0 Luther and the West (1 Unit)** Examination of Luther's work in the context of his life and times. Introduces basic dimensions of Western thought, showing how theology relates to broader cultural, political, social, and aesthetic issues. GERMAN 272-0 and RELIGION 272-0 are taught together; may not receive credit for both courses. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 275-0 Mysticism and Spirituality (1 Unit)** Examines mysticism (mystical experience, relationship, prayer, or consciousness) and spirituality (spiritual presence and practice) across religious traditions and outside traditions. *Ethics Values Distro Area*

**RELIGION 295-0 Ahimsa: Nonviolence in South Asia and Beyond (1 Unit)** Theory and practice of nonviolence in human action, taking into account ethics as well as efficacy. Emphasis on both spiritual and practical approaches to nonviolence and its usefulness in effecting spiritual development and social change. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**RELIGION 301-0 Hindu Epics: Mahābhārata (1 Unit)**

Immersion in the ancient Sanskrit epic in translation and modern retellings, focusing on classical Hindu myth and theology as well as issues of justice, war, gender, and violence.

*Advanced Expression Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**RELIGION 302-0 Hindu Epics: Rāmāyaṇa (1 Unit)**

Immersion in the ancient Sanskrit epic in translation and modern retellings, focusing on classical Hindu myth and theology as well as issues of justice, violence, gender, and love.

*Ethics Values Distro Area*

**RELIGION 305-1 Introductory Readings in Sanskrit I (1 Unit)** This course is the first of a two quarter sequence that provides instruction in the Sanskrit language for beginners. No prior knowledge is required. It begins a comprehensive introduction to the Sanskrit language, while engaging students from the beginning in the practice of translation.

**RELIGION 305-2 Introductory Readings in Sanskrit II (1 Unit)**

This course is the second of a two quarter sequence that provides instruction in the Sanskrit language for beginners. Students continue a comprehensive introduction to the Sanskrit language through study of its forms and through translation. Prerequisite: RELIGION 305-1.

**RELIGION 308-0 Indian Philosophy (1 Unit)** This course offers an introduction to ancient Indian philosophical traditions. We will look first at the distinctive features of philosophy in South Asia, including its particular aims and presuppositions. Thereafter we will look in some detail at two major Hindu traditions from the classical period: Sāṃkhya-Yoga and Advaita Vedānta. We also briefly explore the Hindu traditions of Nyāya and Vaiśeṣika. From there, we will turn to look at classical Buddhist and Jain philosophy. Our major topics will include metaphysics, consciousness, ego, meditation and the release from human suffering. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 309-0 Topics in Hinduism (1 Unit)** Content varies. May be repeated for credit with change of topic. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 312-0 Buddhism and Gender (1 Unit)**

Women, men, and gendered symbolism in Buddhism from the time of the Buddha to the present. Draws on canonical texts, narrative literature, autobiography and biography, and ethnography.

*Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**RELIGION 313-0 Tibetan Religion and Culture (1 Unit)**

Propagation of religions in Tibet in their larger historical, cultural, and political contexts.

*Ethics Values Distro Area*

**RELIGION 314-0 Buddhism in the Contemporary World (1 Unit)** An exploration of where, why, and how Buddhist practices, ideas, and iconography are spreading and being reinterpreted in the modern world. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area U.S. Perspectives on Power, Justice, and Equity*

**RELIGION 315-0 Buddhist Auto/biography (1 Unit)**

An exploration of Buddhist narratives of the self, including Sanskrit and Tibetan-language biographies and autobiographies in English translation, in conversation with literary theory.

*Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**RELIGION 316-0 Religion and the Body in China (1 Unit)**

Explores the place of the body in Chinese religion, from the ancient period to the present day. Touches on dying and the afterlife, food and drink, health and medicine, gender and family, and other themes.

*Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 318-0 Topics in East Asian Religions (1 Unit)** Content varies.

May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 319-0 Topics in Buddhism (1 Unit)** Content varies. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**RELIGION 329-0 Topics in the Bible (1 Unit)** Content varies. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 330-0 Varieties of Ancient Judaism (1 Unit)** Introduction to the Judaisms that flourished from the fifth century BCE to the third century CE. *Ethics Values Distro Area*

**RELIGION 333-0 Judaism in the Modern World (1 Unit)** Radical changes that emancipation and modernity have brought to the religious expression of Judaism. May be repeated for credit. *Ethics Values Distro Area*

**RELIGION 339-0 Topics in Judaism (1 Unit)**

Content varies. May be repeated for credit with change of topic. *Ethics Values Distro Area*

**RELIGION 345-0 Idea of Sainthood in Christianity (1 Unit)** Historical and contemporary conceptions of sanctity, especially in Roman Catholicism and Eastern Orthodoxy. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 346-0 Church Architecture (1 Unit)** Survey of historical and recent churches: spatial dynamics, centering focus, aesthetic impact, and symbolic resonance. *Ethics Values Distro Area*

**RELIGION 349-0 Topics in Christianity (1 Unit)** Content varies. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 350-0 The Qur'an (1 Unit)** Islam's sacred scripture, Muslim understandings of revelation and prophecy, and debates about the Qur'an in the contemporary world. *Ethics Values Distro Area*

**RELIGION 351-0 Islamic Law (1 Unit)** Evolution of Islamic Law from the Prophet Muhammad to the contemporary world, focusing on the impact of colonialism. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Foundational Discipline*

**RELIGION 354-0 Sufism (1 Unit)** The historical development of Islamic mystical traditions, with special attention to notions of mystical experience, sainthood, and devotion to the Prophet Muhammad. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 359-0 Topics in Islam (1 Unit)** Selected topics in Islamic history and thought. May be repeated for credit with different topic. *Ethics Values Distro Area*

**RELIGION 359-SA Topics in Islam (1 Unit)** Selected topics in Islamic history and thought. May be repeated for credit with different topic. *Ethics Values Distro Area*

**RELIGION 360-0 Black Religions (1 Unit)** Exploration of the historical diversity of African American religious experiences and identities. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**RELIGION 363-0 Topics in Women and Religion in America (1 Unit)** Topics, figures, events, and dynamics in the history of American women and religion. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 369-0 Topics in American Religion (1 Unit)** Content varies. May be repeated for credit with change of topic. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 371-0 Religion, TV, and Film (1 Unit)** Content varies. Explores expressions and representations of religion, spirituality, moral questions, transcendence, meaning of life, etc. in TV and film. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**RELIGION 373-0 Religion and Bioethics (1 Unit)** Analysis of contemporary dilemmas in medicine and the life sciences; responses to these dilemmas from religious perspectives. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 374-0 Contemporary Religious Thought (1 Unit)** Content varies (e.g., convergence between religious paths, science and religion, politics and religion). May be repeated for credit with change of topic. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**RELIGION 375-0 Foundations of Christian Thought (1 Unit)** Christian interpretations of salvation, Christ, and God, from Augustine to Julian of Norwich. *Ethics Values Distro Area*

**RELIGION 376-0 Christianity and the Making of Modernity (1 Unit)** Role of Christian thought in shaping the turbulent history of the West from the 16th to the late-18th centuries. Christianity's engagement with local and global events, from reformation to revolution, reason to romanticism. *Ethics Values Distro Area*

**RELIGION 377-0 Christian Thought in Global Perspective (1 Unit)** Globalization of Christian thought in the 19th-21st centuries, considering religious differences, colonialism, war, and democracy. Approaches to theology in Asia, Latin America, and Africa. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area*

**RELIGION 378-0 Death: Myth and Meaning (1 Unit)** Ideas, beliefs, and practices pertaining to death from a variety of ancient and modern cultures. Immortality, afterlife, care for the dying, suicide, funerary rituals, transhumanism. *Ethics Values Distro Area*

**RELIGION 379-0 Topics in Comparative Religion (1 Unit)** Content varies. May be repeated for credit with change of topic. *Ethics Values Distro Area*

**RELIGION 381-0 Global Catholicism in the Contemporary World (1 Unit)** Historical and contemporary global Catholicism. Topics include the church and political modernity; local saints; controversies over worship styles; Catholics and political revolutions; the Vatican; the pontificate of John Paul II. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 382-0 Religion, Law, & Politics: Politics of Religious Diversity (1 Unit)** This course teaches students to think critically, comparatively, and globally about the intersections of religion, law, and politics. It considers how religious, legal, and political traditions intersect and interact in modern states and societies. The course is organized around a set of legal cases and supporting materials in the Teaching Law and Religion Case Study Archive. RELIGION 382-0 taught with POLI\_SCI 382-0; may not receive credit for both. *Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**RELIGION 385-0 Topics in United States Catholicism (1 Unit)** Historical and contemporary subjects in the study of Catholic culture in the United States. May be taken multiple times with different content. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 386-0 Topics in Latin America Catholicism (1 Unit)** Historical and contemporary subjects in the study of Catholic culture in Latin America. May be taken multiple times with different content. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**RELIGION 395-0 Theories of Religion (1 Unit)** Ways of critically analyzing religious experience and its meaning. Phenomenology of religion, history of religions, comparative religions. For Religious Studies majors/minors and for others by permission. *Ethics Values Distro Area*

**RELIGION 396-1 Senior Seminar (1 Unit)** For honors students writing the senior thesis.

**RELIGION 396-2 Senior Seminar (1 Unit)** For honors students writing the senior thesis.

**RELIGION 399-0 Independent Study (1 Unit)** Reading and conferences on special subjects for advanced students. Consent of instructor required.

## Religious Studies Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Major Requirements (12 units)

- 1 introductory course: RELIGION 170-0 Introduction to the Study of Religion or RELIGION 172-0 Introduction to Religion, Media, and Culture.
- RELIGION 395-0 Theories of Religion
- For *global study of religion* concentration
  - 10 additional religion courses (up to 2 religion-related courses from outside the department may be counted toward the major with prior approval of the department adviser).
- For concentrations in *religion, health, and medicine; religion, law, and politics; or religion, sexuality, and gender*
  - 8 additional courses in the department, including at least 3 approved for the chosen concentration (please check with department adviser)
  - 2 courses outside the department, approved by the department adviser:
    - 2 global health ([https://catalogs.northwestern.edu/undergraduate/courses-az/gbl\\_hlth/](https://catalogs.northwestern.edu/undergraduate/courses-az/gbl_hlth/)) courses for religion, health, and medicine concentration
    - 2 legal studies ([https://catalogs.northwestern.edu/undergraduate/courses-az/legal\\_st/](https://catalogs.northwestern.edu/undergraduate/courses-az/legal_st/)) or political science ([https://catalogs.northwestern.edu/undergraduate/courses-az/poli\\_sci/](https://catalogs.northwestern.edu/undergraduate/courses-az/poli_sci/)) courses for religion, law, and politics concentration
    - 2 gender and sexuality studies ([https://catalogs.northwestern.edu/undergraduate/courses-az/gndr\\_st/](https://catalogs.northwestern.edu/undergraduate/courses-az/gndr_st/)) courses for religion, gender, and sexuality concentration

First-Year Seminars, College Seminars, and First-Year Writing Seminars do not count toward the major.

## Honors in Religious Studies

Majors with strong academic records and an interest in pursuing honors should notify the undergraduate honors coordinator in writing by the end of spring quarter of junior year. Students become eligible for departmental honors by writing a senior thesis in addition to completing the 12 courses required for the major. The thesis is usually accomplished by enrolling in RELIGION 396-1 Senior Seminar during fall quarter of senior year and RELIGION 396-2 Senior Seminar during winter quarter of senior year. These courses do *not* count toward the major. In years when the seminar cannot run for whatever reason, students work with the Director of Undergraduate Studies to schedule independent studies and/or participation in another department's thesis-writing workshop during the senior year. More details on the Senior Thesis Honors Program (<https://religious-studies.northwestern.edu/undergraduate/major/senior-thesis-honors-program.html>) page.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the undergraduate honors coordinator and see Honors in the Major (p. 222).

## Religious Studies Minor

Course	Title
<b>Minor Requirements: Religious Studies (6 units)</b>	
RELIGION 170-0 or RELIGION 172-0	Introduction to the Study of Religion Introduction to Religion, Media, and Culture

5 other departmental courses (not including First-Year Seminars, College Seminars, or First-Year Writing Seminars)

At least 3 must be at the 300 or 400 level.

## Catholic Studies Minor

Roman Catholic ways of thinking, living, and organizing the world have been fundamental to cultures since the fifth century of the Common Era, and the story of modernity in all its variations cannot be told without Catholicism. The Catholic studies program offers the opportunity to look at civilizations and cultures through the lens of the interdisciplinary study of Catholicism, using the critical tools of contemporary academic research and conversation.

The minor requires at least 6 courses. These include a core course introducing contextual, interdisciplinary approaches to the subject and the interaction between Catholic ideas and institutions and the broader world.

Five elective courses allow students to explore a particular topic more deeply. Appropriate courses from other departments (such as art history, English, history, political science, and sociology) can count toward the minor with the department adviser's approval.

## Minor Requirements

Course	Title
<b>Catholic Studies (6 units)</b>	
RELIGION 381-0	Global Catholicism in the Contemporary World
5 additional courses:	
Must be chosen with the department adviser from:	
RELIGION 345-0	Idea of Sainthood in Christianity
RELIGION 349-0	Topics in Christianity
RELIGION 375-0	Foundations of Christian Thought
RELIGION 385-0	Topics in United States Catholicism
RELIGION 386-0	Topics in Latin America Catholicism
Or other relevant courses in religious studies and other departments.	

## Russian

See Slavic Languages and Literatures (p. 418).

## Science in Human Culture

shc.northwestern.edu

The Science in Human Culture Program prepares students to confront the global impact of science, medicine, and technology on society—and on their own lives. The adjunct major and the minor welcome humanities, social science, and science majors, including premedical students, wishing to surmount modern science's compartmentalization of knowledge. Courses bridge the sciences and the humanities and seek to foster critical thinking about the limits, authority, and impact of science, a mode of understanding and intervening that is often said to be the defining feature of modern culture.

For an up-to-date listing of courses and more information about the adjunct major and minor, consult the program website. Questions may be directed to the program administrator at [shc-program@northwestern.edu](mailto:shc-program@northwestern.edu).

## Themes and Eligible Courses

Some of the themes adopted by students have included medicine and society; science, environment, and society; technology and social change; science and gender; religion and scientific knowledge; and philosophy of science. For example, students interested in medicine and society might explore the interaction of medical knowledge and practice, medical ethics, and the boundaries between sickness and health. Topics addressed might include the authority of the physician, the role of the hospital, the social dimensions of racial and gender differences, and the changing conception of disease and healing.

Eligible courses include (when offered) the list below. Many other eligible courses are offered periodically and appear in the online quarterly class list posted on the program website.

### Anthropology

Course	Title
ANTHRO 315-0	Medical Anthropology
ANTHRO 332-0	The Anthropology of Reproduction
ANTHRO 334-0	The Anthropology of HIV/AIDS: Ethnographies
ANTHRO 343-0	Anthropology of Race
ANTHRO 383-0	Environmental Anthropology

### Communication Studies

Course	Title
COMM_ST 227-0	Communication & Technology
COMM_ST 246-0	Intro to Health Communication
COMM_ST 351-0	Technology & Human Interaction
COMM_ST 353-0	Collaboration Technology
COMM_ST 378-0	Online Communities and Crowds
COMM_ST 383-0	Media, Communication, and Environment
COMM_ST 386-0	Science, Technology, and Society
COMM_ST 388-0	Internet and Society

### Economics

Course	Title
ECON 307-0	Economics of Medical Care
ECON 318-0	History of Economic Thought
ECON 323-1	Economic History of the United States Before 1865
ECON 323-2	Economic History of the United States 1865 to Present

### Environmental Policy and Culture

Course	Title
ENVR_POL 211-0	Food and Society: An Introduction
ENVR_POL 212-0	Environment and Society
ENVR_POL 309-0	American Environmental History
ENVR_POL 311-0	Food, Politics and Society
ENVR_POL 336-0	The Climate Crisis, Policies, and Society
ENVR_POL 340-0	Global Environments and World History

### Global Health

Course	Title
GBL_HLTH 201-0	Introduction to Global Health
GBL_HLTH 302-0	Global Bioethics
GBL_HLTH 306-0	Biomedicine and Culture

GBL_HLTH 307-0	International Perspectives on Mental Health
GBL_HLTH 309-0	Biomedicine and World History

### Gender Studies

Course	Title
GNDR_ST 232-0	Sexuality and Society
GNDR_ST 250-0	Gender Issues in Science and Health
GNDR_ST 332-0	Gender, Sexuality, and Health
GNDR_ST 374-0	Gender, Sexuality, and Digital Technologies

### History

Course	Title
HISTORY 251-0	The Politics of Disaster: A Global Environmental History
HISTORY 275-1	History of Early Modern Science and Medicine
HISTORY 275-2	History of Modern Science and Medicine
HISTORY 325-0	History of American Technology
HISTORY 376-0	Global Environments and World History
HISTORY 378-0	History of Law and Science
HISTORY 379-0	Biomedicine and World History

### Humanities

Course	Title
HUM 220-0	Health, Biomedicine, Culture, and Society

### Journalism

Course	Title
JOUR 383-0	Health and Science Reporting

### Philosophy

Course	Title
PHIL 151-0	Scientific Reasoning
PHIL 254-0	Introduction to Philosophy of the Natural Sciences
PHIL 268-0	Ethics and the Environment
PHIL 269-0	Bioethics
PHIL 275-0	Climate Change and Sustainability: Ethical Dimensions
PHIL 326-0	Topics in Philosophy of Medicine
PHIL 352-0	Philosophy of Mathematics
PHIL 355-0	Scientific Method in the Social Sciences

### Political Science

Course	Title
POLI_SCI 329-0	U.S. Environmental Politics
POLI_SCI 349-0	International Environmental Politics

### Psychology

Course	Title
PSYCH 248-0	Health Psychology
PSYCH 340-0	Psychology and Law

### Religious Studies

Course	Title
RELIGION 173-0	Religion, Medicine & Suffering in the West
RELIGION 373-0	Religion and Bioethics

## Sociology

Course	Title
SOCIOL 211-0	Food and Society: An Introduction
SOCIOL 212-0	Environment and Society
SOCIOL 220-0	Health, Biomedicine, Culture, and Society
SOCIOL 232-0	Sexuality and Society
SOCIOL 305-0	Population Dynamics
SOCIOL 311-0	Food, Politics and Society
SOCIOL 319-0	Sociology of Science
SOCIOL 321-0	Numbers, Identity & Modernity: How Calculation Shapes Who We Are & What We Know
SOCIOL 336-0	The Climate Crisis, Policies, and Society

HISTORY 325-0	History of American Technology
HISTORY 378-0	History of Law and Science
HISTORY 379-0	Biomedicine and World History
<b>Course</b>	<b>Title</b>
<b>Other core courses</b>	
HUM 220-0	Health, Biomedicine, Culture, and Society
PHIL 268-0	Ethics and the Environment
PHIL 269-0	Bioethics
PHIL 326-0	Topics in Philosophy of Medicine
SOCIOL 220-0	Health, Biomedicine, Culture, and Society
SOCIOL 319-0	Sociology of Science

## Programs of Study

- Science in Human Culture Adjunct Major (p. 418)
- Science in Human Culture Minor (p. 418)

**SHC 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SHC 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SHC 398-1 Science in Human Culture Senior Seminar (1 Unit)** For students who wish to qualify for honors by writing a senior thesis.

**SHC 398-2 Science in Human Culture Senior Seminar (1 Unit)** For students who wish to qualify for honors by writing a senior thesis.

**SHC 398-3 Science in Human Culture Senior Seminar (1 Unit)** For students who wish to qualify for honors by writing a senior thesis.

## Science in Human Culture Adjunct Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Adjunct Major Requirements (10 units)

- Courses are chosen from the list of Eligible Courses (p. 416) or the approved list on the program website and generally relate to a theme developed with the program director.
- 3 must be core courses, including at least 1 from each of the following lists:

Course	Title
<b>History core courses</b>	
HISTORY 251-0	The Politics of Disaster: A Global Environmental History
HISTORY 275-1	History of Early Modern Science and Medicine
HISTORY 275-2	History of Modern Science and Medicine

- At least 6 of the 10 courses must be at the 300 level.
- Course substitutions may be allowed with the consent of the program director.
- All adjunct majors require completion of a stand-alone major as well. Up to 2 courses for the science in human culture adjunct major may be counted toward another major.

## Honors in Science in Human Culture

Majors with strong academic records and an interest in pursuing honors should submit a proposal to the program director by the end of the sixth week of spring quarter of junior year. To graduate with honors, students must take 9 courses toward the major (not counting the honors sequence) and must satisfy the core course requirements. In addition, they must write a senior thesis of sufficiently high quality while enrolled in the 3-quarter honors sequence:

Course	Title
SHC 398-1	Science in Human Culture Senior Seminar
& SHC 398-2	and Science in Human Culture Senior Seminar
& SHC 398-3	and Science in Human Culture Senior Seminar

Students whose theses and grades meet program criteria are recommended to the college for graduation with honors. For more information see the detailed explanation on the program website, contact the program director, and see Honors in the Major (p. 222).

## Science in Human Culture Minor Minor Requirements (7 units)

- Courses are chosen from the list of Eligible Courses (p. 416) or from the approved list on the program website and generally relate to a theme developed with the program director.
- One (1) course must be a 300-level course.
- Up to two (2) courses can double-count toward a major.
- Course substitutions may be allowed with the consent of the program director.

## Slavic Languages and Literatures

[slavic.northwestern.edu](http://slavic.northwestern.edu)

The Department of Slavic Languages and Literatures offers a full program of study in Russian language and literature and a range of other courses on the languages, culture, and history of Eastern Europe.

Russian study encompasses a broad discipline that touches on many others. For example, Turgenev, Dostoevsky, Tolstoy, and Chekhov probe

philosophical, social, political, and psychological issues that are central to the modern experience and fundamental to Western culture. Courses in Russian literature open up the artistry and ideas of this intellectual tradition. All periods of Russian literature are represented, with emphasis on the 19th through 21st centuries.

Majors may choose to concentrate in "Russian Language, Literature and Culture" or "Russian and East European Studies." Some students seek a deep knowledge of Russian culture and literary tradition, while others are more interested in acquiring international knowledge and language proficiency for use in such fields as government, law, business, or journalism. The major (or minor) may complement study of history, political science, health, or other disciplines. Minors in "Russian and East European Studies" gain a broad understanding of Slavic literature and culture. They may focus on Czech, Polish, or Russian studies without a language prerequisite.

The department strongly recommends that students study abroad. Programs take place in Almaty, Belgrade, Kraków, Prague, Riga, and Sarajevo. Students should consult the undergraduate adviser in the department or an adviser in the Global Learning Office (<https://www.northwestern.edu/abroad/>) to learn more about study abroad options.

## Programs of Study

- Slavic Languages and Literatures Major (p. 421)
- Russian and East European Studies Minor (p. 423)

See below for Russian Courses (p. 420) and Polish Courses (p. 421).

**SLAVIC 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SLAVIC 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SLAVIC 106-SA Elementary Czech (1 Unit)** Czech language and culture. Basic reading, writing, listening, and speaking. No prerequisite.

**SLAVIC 210-1 Introduction to Russian Literature (1 Unit)** Comprehensive overview of the central prose works and literary movements in 19th-century Russia. 1. Thematic and formal study of major works by Pushkin, Gogol, Lermontov, Turgenev. 2. Tolstoy, Dostoevsky. 3. Turgenev, the late Tolstoy, Chekhov, Bunin. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 210-2 Introduction to Russian Literature (1 Unit)** Comprehensive overview of the central prose works and literary movements in 19th-century Russia. 1. Thematic and formal study of major works by Pushkin, Gogol, Lermontov, Turgenev. 2. Tolstoy, Dostoevsky. 3. Turgenev, the late Tolstoy, Chekhov, Bunin. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 210-3 Introduction to Russian Literature (1 Unit)** Comprehensive overview of the central prose works and literary movements in 19th-century Russia. 1. Thematic and formal study of major works by Pushkin, Gogol, Lermontov, Turgenev. 2. Tolstoy, Dostoevsky. 3. Turgenev, the late Tolstoy, Chekhov, Bunin. *Literature Fine Arts Distro Area*

**SLAVIC 211-1 20th-Century Russian Literature (1 Unit)** Major works in cultural-historical context, from the revolutions of 1917 through the

present. Variable content depending on instructor. Focus on one of the following: Russian modernism in literature, music, film, and visual art; non-conformism in Soviet literature and visual arts (1940s to 1986); and contemporary Russian culture. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 211-2 20th-Century Russian Literature (1 Unit)** Major works in cultural-historical context, from the revolutions of 1917 through the present. Variable content depending on instructor. Russian literature, film, and visual art in the transition from communism to post-communism. Writers examined may include Pasternak, Bulgakov, Solzhenitsyn, and Sinyavsky/Tertz. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 218-0 Introduction to Polish Literature (1 Unit)** Survey of key literary works in Poland from the 19th century to the present. Focus on literary movements such as romanticism, realism, the Young Poland Movement, the avant-garde, Holocaust literature, and dissident and queer literature. *Global Perspectives on Power, Justice, and Equity Literature and Arts Foundational Discipline*

**SLAVIC 222-0 Language, Politics, & Identity (1 Unit)** Role of language in constructing, preserving, and manipulating political and national identities. Topics include language discrimination, linguistic nationalism, language and religion, alphabet issues, dialect issues. Regional content varies. LING 222-0 and SLAVIC 222-0 are taught together; may not receive credit for both courses. *Ethics Values Distro Area Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216)*

**SLAVIC 250-SA Balkan Civilizations (1 Unit)** Culture, history, politics, language, and literature of the Balkans historically and/or in modern periods. Content varies with instructor; may be repeated for credit. Restricted to students participating in NU-sponsored study abroad programs. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Historical Studies Foundational Discipline*

**SLAVIC 255-0 Slavic Civilizations (1 Unit)** Culture, history, language, and literature of the Slavs historically and/or in modern periods. Content varies with instructor; may be repeated for credit. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 260-0 Economics and the Humanities: Understanding Choice (1 Unit)** A conversation among disciplines, especially economics and literary studies. Explores social, ethical, and political big questions. *Ethics Values Distro Area Literature Fine Arts Distro Area*

**SLAVIC 261-0 Heart of Europe: Poland in the Twentieth Century (1 Unit)** Study of key developments in Polish history, literature, and thought by way of texts drawn from literature, history, politics, journalism, memoirs, essays, and film. Poland as a microcosm for recent European history and culture. *Historical Studies Distro Area Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 267-0 Czech Culture: Film, Visual Arts & Music (1 Unit)** Czech culture represented in film and visual arts. *Literature Fine Arts Distro Area*

**SLAVIC 267-SA Czech Culture (1 Unit)**

**SLAVIC 278-1 Visual Art in the Context of Russian Culture (1 Unit)** Introduction to the history of Russian art: survey of major trends in Russian visual art in the dual contexts of Russian culture and European visual art. Focus on interconnections among visual arts, literature, and political history. Russian art from the medieval period to the beginning of the 20th century. *Literature Fine Arts Distro Area*

**SLAVIC 278-2 Visual Art in the Context of Russian Culture (1 Unit)**

Introduction to the history of Russian art: survey of major trends in Russian visual art in the dual contexts of Russian culture and European

visual art. Focus on interconnections among visual arts, literature, and political history. Russian art of the 20th century.

**SLAVIC 310-0 Tolstoy (1 Unit)**

This course is devoted to a careful consideration of one book, Tolstoy's War and Peace, as we come to appreciate why it is often considered the world's greatest novel.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 311-0 Dostoevsky (1 Unit)**

Introduction to Dostoevsky's life and works: Notes from the Underground, Crime and Punishment, Brothers Karamazov.

*Literature Fine Arts Distro Area*

**SLAVIC 314-0 Chekhov (1 Unit)**

Introduction to the fiction and plays of Anton Chekhov, father of the modern short story. His writing in its Russian cultural context and his influence on English-language drama, fiction, and film. Readings include The Cherry Orchard, The Seagull, Uncle Vania, and short stories.

*Literature Fine Arts Distro Area*

**SLAVIC 318-0 Polish Cinema (1 Unit)**

Development of Polish film from silent era to contemporary times with focus on major historical and political events in Poland in the twentieth and twenty-first centuries. Special focus on what it means to study "national cinema". *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 322-0 Making a Dictionary: The Northwestern Project (1 Unit)**

Creation of an online dictionary of Northwestern language. Learning about the connection between language, society, and identity; sociolinguistic fieldwork; lexicography; politics of dictionaries. LING 363-0 and SLAVIC 322-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**SLAVIC 328-0 Prague: City of Cultures, City of Conflict (1 Unit)**

Examination of the cultural, political, and social transformation of Prague from the 19th century to the present. Cosmopolitan Prague, communist Prague, and capitalist Prague. SLAVIC 328-0 and GERMAN 328-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power, Justice, and Equity Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 341-0 Structure of Modern Russian (1 Unit)**

Theories and methods of linguistics as applied to the description of modern Russian. Phonetics, morphology, and other topics.

*Formal Studies Distro Area*

**SLAVIC 360-0 Survey of 19th Century Russian Poetry (1 Unit)**

Introduction to the wealth of Russian 19th century lyric poetry and basic techniques for its study: Pushkin, Baratynsky, Lermontov, Tyutchev, Fet. *Literature Fine Arts Distro Area*

**SLAVIC 361-0 Survey of 20th Century Russian Poetry (1 Unit)**

Introduction to the major currents of Russian 20th century lyric poetry and basic techniques for its study: Tsvetaeva, Mayakovsky, Khlebnikov, Blok, Akhmatova, Mandelshtam, Pasternak, Brodsky.

*Literature Fine Arts Distro Area*

**SLAVIC 367-1 Russian Film (1 Unit)**

Development of Russian film and film theory from the silent era to the 1980s. Golden Age of Russian cinema (Eisenstein, Pudovkin, Vertov, Protazanov, Vasiliev brothers, Dovzhenko, socialist realism). *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 368-0 Andrei Tarkovsky's Aesthetics and World Cinema (1 Unit)**

Major films of Tarkovsky and of Russian and non-Russian directors

whose work is related to his (Eisenstein, Wenders, Bergman, Kurosawa).

*Literature Fine Arts Distro Area*

**SLAVIC 369-0 Russian Drama (1 Unit)**

Dramatic traditions of Russia from the 19th century through Russian modernism to contemporary theater. Dramas by Gogol, Ostrovsky, Gorky, Chekhov, Blok, Mayakovskiy, and others.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SLAVIC 390-0 History and Culture in Central and Eastern Europe (1 Unit)**

Course concerns the interaction of history, politics, and culture in Central and Eastern Europe. Content varies. May be repeated for credit.

*Advanced Expression Historical Studies Distro Area Historical Studies*

*Foundational Discipline Interdisciplinary Distro - See Rules (p. 216)*

*Literature Fine Arts Distro Area*

**SLAVIC 392-0 East European Literature and Visual Arts (1 Unit)**

Course focuses on the intersection of literature, visual arts, film, and politics in Central and Eastern Europe. Content varies; may be repeated for credit.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts*

*Foundational Discipline*

**SLAVIC 396-0 Topics in Literature and Arts (1 Unit)**

Content varies. May be repeated for credit. *Literature Fine Arts Distro Area*

**SLAVIC 399-0 Independent Study (1 Unit)**

For majors selected as candidates for departmental honors; for other advanced students with consent of instructor.

**SLAVIC 399-SA Independent Study (1 Unit)**

For majors selected as candidates for departmental honors; for other advanced students with consent of instructor.

## Russian Courses

**RUSSIAN 101-1 Elementary Russian (1 Unit)** Russian language and culture. Basic reading, writing, listening, and speaking. No prerequisite.

**RUSSIAN 101-2 Elementary Russian (1 Unit)** Russian language and culture. Basic reading, writing, listening, and speaking. Prerequisite: RUSSIAN 101-1 (or equivalent).

**RUSSIAN 101-3 Elementary Russian (1 Unit)** Russian language and culture. Basic reading, writing, listening, and speaking. Prerequisite: RUSSIAN 101-2 (or equivalent).

**RUSSIAN 102-1 Intermediate Russian (1 Unit)** Russian language and culture. Reading, writing, listening, and speaking. Prerequisite: RUSSIAN 101-3 (or equivalent).

**RUSSIAN 102-2 Intermediate Russian (1 Unit)** Russian language and culture. Reading, writing, listening, and speaking. Prerequisite: RUSSIAN 102-1 (or equivalent).

**RUSSIAN 102-3 Intermediate Russian (1 Unit)** Russian language and culture. Reading, writing, listening, and speaking. Prerequisite: RUSSIAN 102-2 (or equivalent).

**RUSSIAN 302-1 Advanced Russian in Conversations (1 Unit)**

Conversation, listening comprehension, reading, and composition. Contemporary readings on Russian culture and society. Combined third-and fourth-year multi-skill course. Prerequisite: RUSSIAN 102-3 or consent of language director. *Advanced Expression*

**RUSSIAN 302-2 Advanced Russian in Conversations (1 Unit)**

Conversation, listening comprehension, reading, and composition. Contemporary readings on Russian culture and society. Combined third-and fourth-year multi-skill course. Prerequisite: RUSSIAN 102-3 or consent of language director. *Advanced Expression*

**RUSSIAN 302-3 Advanced Russian in Conversations (1 Unit)**

Conversation, listening comprehension, reading, and composition. Contemporary readings on Russian culture and society. Combined third-and fourth-year multi-skill course. Prerequisite: RUSSIAN 102-3 or consent of language director. *Advanced Expression*

**RUSSIAN 303-1 Advanced Russian Language and Culture (1 Unit)**

Conversation, listening comprehension, reading, and composition. Exploration of modern Russian language and culture through readings, video, and film. Combined third-and fourth-year multi-skill course. Prerequisite: RUSSIAN 102-3 or consent of language director.

**RUSSIAN 303-2 Advanced Russian Language and Culture (1 Unit)**

Conversation, listening comprehension, reading, and composition. Exploration of modern Russian language and culture through readings, video, and film. Combined third-and fourth-year multi-skill course. Prerequisite: RUSSIAN 102-3 or consent of language director.

**RUSSIAN 303-3 Advanced Russian Language and Culture (1 Unit)**

Conversation, listening comprehension, reading, and composition. Exploration of modern Russian language and culture through readings, video, and film. Combined third-and fourth-year multi-skill course. Prerequisite: RUSSIAN 102-3 or consent of language director.

**RUSSIAN 304-1 Advanced Contemporary Russian (1 Unit)**

Russian for advanced speakers, including heritage speakers. Stress on skills in speaking, reading, and writing in professional and formal environments. Taught entirely in Russian. Prerequisite: RUSSIAN 302-3 or RUSSIAN 303-3 (or equivalent).

**RUSSIAN 304-2 Advanced Contemporary Russian (1 Unit)**

Russian for advanced speakers, including heritage speakers. Stress on skills in speaking, reading, and writing in professional and formal environments. Prerequisite: RUSSIAN 302-3 or RUSSIAN 303-3 (or equivalent).

**RUSSIAN 359-0 Russian Prose (1 Unit)**

Selected works of Russian masters. Lecture, readings and discussion in Russian. Russian modernist prose, socialist realism and 1940s to the present. Content varies. May be repeated for credit.

Prerequisite: RUSSIAN 302-3 or RUSSIAN 303-3 (or equivalent).

*Literature Fine Arts Distro Area*

## Polish Courses

**POLISH 108-1 Elementary Polish (1 Unit)**

Polish language and culture.

Basic reading, writing, listening, and speaking. No prerequisite.

**POLISH 108-2 Elementary Polish (1 Unit)**

Polish language and culture. Basic reading, writing, listening, and speaking. Prerequisite: POLISH 108-1 (or equivalent).

**POLISH 108-3 Elementary Polish (1 Unit)**

Polish language and culture. Basic reading, writing, listening, and speaking. Prerequisite: POLISH 108-2 (or equivalent).

**POLISH 208-1 Intermediate Polish: Language and Culture (1 Unit)**

Reading on topics in Polish culture and society. Prerequisite: POLISH 108-3 (or equivalent).

**POLISH 208-2 Intermediate Polish: Language and Culture (1 Unit)**

Reading on topics in Polish culture and society. Prerequisite: POLISH 208-1 (or equivalent).

**POLISH 208-3 Intermediate Polish: Language and Culture (1 Unit)**

Reading on topics in Polish culture and society. Prerequisite: POLISH 208-2 (or equivalent).

**POLISH 358-1 Polish for Advanced and Native Speakers (1 Unit)**

Polish for advanced speakers, including heritage speakers. Stress on advanced levels of reading and writing as well as speaking. Taught

entirely in Polish. Content varies; may be repeated for credit. Prerequisite: POLISH 208-3 (or equivalent). *Advanced Expression Literature Fine Arts Distro Area*

**POLISH 358-2 Polish for Advanced and Native Speakers (1 Unit)**

Polish for advanced speakers, including heritage speakers. Stress on advanced levels of reading and writing as well as speaking. Taught entirely in Polish. Content varies; may be repeated for credit. Prerequisite: POLISH 208-3 (or equivalent). *Advanced Expression Literature Fine Arts Distro Area*

## Slavic Languages and Literatures Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Concentration in Russian Language, Literature, and Culture

This concentration is guided by a focus on 19th- and 20th-century Russian literature. Through language and literature study, students receive an intensive understanding of Russian culture, including political, religious, and cultural ideas.

Course	Title
<b>Prerequisite</b>	
RUSSIAN 102-1 & RUSSIAN 102-2 & RUSSIAN 102-3	Intermediate Russian and Intermediate Russian and Intermediate Russian or equivalent Russian proficiency
<b>Department Courses (12 units)</b>	
3 courses in advanced Russian language chosen from:	
RUSSIAN 302-1	Advanced Russian in Conversations
RUSSIAN 302-2	Advanced Russian in Conversations
RUSSIAN 302-3	Advanced Russian in Conversations
RUSSIAN 303-1	Advanced Russian Language and Culture
RUSSIAN 303-2	Advanced Russian Language and Culture
RUSSIAN 303-3	Advanced Russian Language and Culture
9 additional courses:	
4 Slavic courses chosen from the following:	
200-level Slavic courses taught in English	
200-level courses taught in other departments and co-listed in Slavic	
1 Slavic First-Year Seminar, College Seminar, or First-Year Writing Seminar	
SLAVIC 360-0	Survey of 19th Century Russian Poetry
or SLAVIC 361-0	Survey of 20th Century Russian Poetry
4 additional Slavic courses at the 300 or 400 level.	
<b>Related Courses</b>	
2 courses from outside the department; must be approved by the director of undergraduate studies. Departments and programs offering relevant courses include art history, history, Jewish studies, musicology, political science, and theater. A current list of approved courses is available on the department's website.	

## Concentration in Russian and East European Studies

This flexible major concentration is designed for students who wish to combine language and literature with work in other disciplines. It is also a good choice for students whose primary interests lie in countries other than Russia.

### Prerequisite

- Two years of college-level Czech, Polish, or Russian language, or equivalent proficiency

### Department courses (typically 12 units; may vary depending on language option)

- One of the following advanced language options:
  - Czech
    - Individual plan requires approval of the Director of Undergraduate Studies.
    - Equivalent of a full year of advanced study; may include SLAVIC 399-0 Independent Study with readings in Czech; and/or study abroad in a language-focused program
  - Polish
    - Individual plan requires approval of the director of undergraduate studies.
    - Equivalent of a full year of advanced study; may include POLISH 358-1 Polish for Advanced and Native Speakers, POLISH 358-2 Polish for Advanced and Native Speakers; SLAVIC 399-0 Independent Study with readings in Polish; and/or study abroad in a language-focused program
  - Russian
 

Course	Title
3 of the following:	
RUSSIAN 302-1	Advanced Russian in Conversations
RUSSIAN 302-2	Advanced Russian in Conversations
RUSSIAN 302-3	Advanced Russian in Conversations
RUSSIAN 303-1	Advanced Russian Language and Culture
RUSSIAN 303-2	Advanced Russian Language and Culture
RUSSIAN 303-3	Advanced Russian Language and Culture
- 9 additional courses
  - 4 100- or 200-level Slavic courses chosen from the following:
    - 200-level Slavic courses taught in English
    - 200-level courses taught in other departments and co-listed in Slavic
    - 1 Slavic First-Year Seminar, College Seminar, or First-Year Writing Seminar
    - 1-2 courses in a second Slavic language
  - 3 Slavic courses at the 300 or 400 level
  - 2 electives from outside the department

### Related Courses

- 2 additional related courses from outside the department; must be approved by the director of undergraduate studies. Departments and programs offering relevant courses include art history, history, Jewish studies, musicology, political science, and theater. A current list of approved courses is available on the department's website.

## Honors in Slavic Languages and Literatures

Majors with strong academic records and an interest in pursuing honors should consult the honors adviser by the end of junior year. Most honors candidates research and write the thesis in 2 quarters of SLAVIC 399-0 Independent Study. Another option is to take a 400-level seminar followed by SLAVIC 399-0 Independent Study, in which the student pursues a topic arising out of the 400-level course. These courses may be counted for credit in the major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information see the program website (<https://www.slavic.northwestern.edu/undergraduate/honors.html>) and Honors in the Major (p. 222).

## Courses

### Courses in Language and Linguistics

Course	Title
<b>Russian courses:</b>	
RUSSIAN 101-1	Elementary Russian
RUSSIAN 101-2	Elementary Russian
RUSSIAN 101-3	Elementary Russian
RUSSIAN 102-1	Intermediate Russian
RUSSIAN 102-2	Intermediate Russian
RUSSIAN 102-3	Intermediate Russian
RUSSIAN 302-1	Advanced Russian in Conversations
RUSSIAN 302-2	Advanced Russian in Conversations
RUSSIAN 302-3	Advanced Russian in Conversations
RUSSIAN 303-1	Advanced Russian Language and Culture
RUSSIAN 303-2	Advanced Russian Language and Culture
RUSSIAN 303-3	Advanced Russian Language and Culture
RUSSIAN 304-1	Advanced Contemporary Russian
RUSSIAN 304-2	Advanced Contemporary Russian
SLAVIC 341-0	Structure of Modern Russian
RUSSIAN 359-0	Russian Prose
<b>Polish courses:</b>	
POLISH 108-1	Elementary Polish
POLISH 108-2	Elementary Polish
POLISH 108-3	Elementary Polish
POLISH 208-1	Intermediate Polish: Language and Culture
POLISH 208-2	Intermediate Polish: Language and Culture
POLISH 208-3	Intermediate Polish: Language and Culture
POLISH 358-1	Polish for Advanced and Native Speakers
POLISH 358-2	Polish for Advanced and Native Speakers

### Courses with Readings and Discussion in English

Course	Title
SLAVIC 210-1	Introduction to Russian Literature
SLAVIC 210-2	Introduction to Russian Literature
SLAVIC 210-3	Introduction to Russian Literature
SLAVIC 211-1	20th-Century Russian Literature
SLAVIC 211-2	20th-Century Russian Literature
SLAVIC 218-0	Introduction to Polish Literature
SLAVIC 250-SA	Balkan Civilizations
SLAVIC 255-0	Slavic Civilizations

SLAVIC 261-0	Heart of Europe: Poland in the Twentieth Century
SLAVIC 267-0	Czech Culture: Film, Visual Arts & Music
SLAVIC 278-1	Visual Art in the Context of Russian Culture
SLAVIC 278-2	Visual Art in the Context of Russian Culture
SLAVIC 310-0	Tolstoy
SLAVIC 311-0	Dostoevsky
SLAVIC 314-0	Chekhov
SLAVIC 318-0	Polish Cinema
SLAVIC 322-0	Making a Dictionary: The Northwestern Project
SLAVIC 328-0	Prague: City of Cultures, City of Conflict
SLAVIC 367-1	Russian Film
SLAVIC 368-0	Andrei Tarkovsky's Aesthetics and World Cinema
SLAVIC 369-0	Russian Drama
SLAVIC 390-0	History and Culture in Central and Eastern Europe
SLAVIC 392-0	East European Literature and Visual Arts
SLAVIC 396-0	Topics in Literature and Arts

## Courses in Literature with Prerequisite in Russian

The prerequisite is proficiency equivalent to completion of third year Russian. This could be demonstrated by successful completion of one of the following: RUSSIAN 302-3, RUSSIAN 303-3, RUSSIAN 304-1, RUSSIAN 304-2, courses taken abroad, or through a placement test. Consent of the instructor is required.

Course	Title
RUSSIAN 359-0	Russian Prose
SLAVIC 360-0	Survey of 19th Century Russian Poetry
SLAVIC 361-0	Survey of 20th Century Russian Poetry
SLAVIC 399-0	Independent Study

## Russian and East European Studies Minor

The minor in Russian and East European Studies offers a broad survey of literature and culture. Students may choose to study a Slavic language, but this is not required. Students are encouraged to meet with the department adviser to select a focus for their courses. Students may focus on Russian literature and culture, Russian language and culture, Czech and East European studies, or Polish and East European studies.

## Minor Requirements (8 units)

- 4 courses at the 200 level
- 4 courses at the 300 level
- The following courses may also count toward the minor:
  - 1 Slavic First-Year Seminar, College Seminar, or First-Year Writing Seminar
  - 3 courses from outside the department, chosen with the consent of the undergraduate adviser
  - 3 East European (or German) language courses at or above the intermediate level

## Sociology

sociology.northwestern.edu

The Department of Sociology offers preparation for careers in a wide range of fields requiring strong research and analytical skills and knowledge of social institutions and diverse cultures. It provides an

excellent background for careers in business, advertising, nonprofits, the arts, public administration, law, medicine and health, journalism and communications, and planning, among others. The department also emphasizes the sociological perspective as a fundamental part of a liberal education and a complex understanding of the world.

The department is particularly strong in the areas of organizations and economic sociology; the sociology of law, health, science, and education; urban studies; international, comparative and historical sociology; the sociology of art and culture; and criminology. It offers a wide variety of approaches to social inequality and its origins and consequences, including class, race, ethnicity, gender, and sexuality.

To benefit from the department's strengths, sociology majors may concentrate in a specific area of study:

- economic sociology and global development
- environment and society
- law and society
- social data research
- social inequality: class, gender, and race
- sociology of health, medicine, and science

Concentrations guide the selection of both sociology and related courses. The department website lists approved courses by concentration. Majors may instead concentrate in general sociology, for which all sociology and related courses fulfill the concentration requirement, or design a concentration area. All concentrations require an adviser's approval.

Unusually good opportunities are available for independent study, field internships, and the use of quantitative and qualitative methods of research. In addition to the courses listed below, the department offers quarterly seminars on special topics of interest.

## Minor Concentrations in Sociology

The Department of Sociology offers minor concentrations in sociological research and in sociological studies. Students seeking a minor in sociology must consult with the director of undergraduate studies or an undergraduate sociology advisor.

## Programs of Study

- Sociology Major (p. 426)
- Sociological Research Minor (p. 427)
- Sociological Studies Minor (p. 427)

**SOCIAL 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SOCIAL 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SOCIAL 110-0 Introduction to Sociology (1 Unit)** Broad overview of a wide range of social issues and ways of sociological thinking. Characteristics of group life. Interrelations of society, culture, and personality; major social institutions and processes. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 201-0 Social Inequality: Race, Class, and Power (1 Unit)** Origins and functions of stratification. Class, prestige, and esteem. Interaction of racial and cultural groups. Inequality in workplaces, neighborhoods, schools, families, media, and other settings. *Social Behavioral Sciences Distro Area*

**SOCIOL 202-0 Social Problems (1 Unit)** Emergence of social problems. How the media, politicians, lawmakers, and others define social issues. How lives and self-images are shaped when people are connected to a social problem. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 206-0 Law and Society (1 Unit)** Introduction to the role of law in American society and the influence of society on law. Courts, the legal profession, law enforcement, inequality, and social change. Taught with LEGAL\_ST 206-0; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 207-0 Cities in Society (1 Unit)** Introduction to issues of cities and metropolitan areas, including spatial, economic, and political trends; private and public decision making; class, race, and gender; and possible solutions to inequalities and planning challenges. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 208-0 Race and Society (1 Unit)** Critical analysis of the biological myth and social reality of race; factors responsible for persistent racial inequality in the United States; social and political implications of race. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 210-0 Families and Societies (1 Unit)** Changes, continuities, and variations in family life in industrialized countries over the past century. Key concepts in sociology and the study of families. Explanations for changes and implications for inequality. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 211-0 Food and Society: An Introduction (1 Unit)** Overview of past and present food systems from a sociological perspective, examining the roles of culture, government policy, and social movements in shaping such systems and future alternatives. ENVR\_POL 211-0 and SOCIOL 211-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 212-0 Environment and Society (1 Unit)** Key environmental problems, such as climate change and oil spills; how they are shaped by the market, government regulations, and social movements; possible solutions. SOCIOL 212-0 and ENVR\_POL 212-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 215-0 Economy and Society (1 Unit)** Introduction to sociological approaches to economic life. Topics include property rights, illegal markets, money, economic inequalities, direct sales, and boycotts. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 216-0 Gender and Society (1 Unit)** How our society creates ideas of what gender and gender-appropriate behaviors are. How these ideas are linked to sexuality and relationships, and how they become part of political conflict. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 218-0 Education and Inequality: Focus on Chicago (1 Unit)** Causes and consequences of educational inequality. History, educational outcomes, and recent reform efforts of Chicago Public Schools. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 220-0 Health, Biomedicine, Culture, and Society (1 Unit)** Provides a broad introduction to controversies surrounding health and biomedicine by analyzing culture, politics, values, and social institutions. Taught with HUM 220-0; may not receive credit for both courses. *Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 223-0 Masculinities and Society (1 Unit)** Introduction to the foundational theory and research in the field of masculinities studies. How is masculinity constructed through interactions with institutions, individuals, and social structure? *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 226-0 Sociological Analysis (1 Unit)** Logic and methods of social research, qualitative and quantitative analysis of social data, and ethical, political, and policy issues in social research. Foundation for further work in social research.

**SOCIOL 227-0 Legal Studies Research Methods (1 Unit)** Introduction to research methodologies used in interdisciplinary legal studies, including jurisprudence and legal reasoning, qualitative and quantitative social science methods, and historical and textual analysis. SOCIOL 227-0 and LEGAL\_ST 207-0 are taught together; may not receive credit for both courses. Prerequisite: LEGAL\_ST 206-0 or SOCIOL 206-0. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 232-0 Sexuality and Society (1 Unit)** Examination of the role of sexuality in the cultural, economic, political, and social organization of the United States. Sex work, sex tourism, sexual migration, LGBT social movements, and moral panics. SOCIOL 232-0 is taught with GNDR\_ST 232-0; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**SOCIOL 235-0 Critical Thought on Race and Ethnicity (1 Unit)** This course examines historical and contemporary manifestations racism, ethnocentrism, nationalism, ancestry, difference, and privilege. Lectures and readings focus on practices of racialization (how individuals/groups are sorted into races), and the development of global and local racial paradigms (the rules of race-making and racial assignment), and finally centers on why these denigrating mechanisms are so difficult to eradicate. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 276-0 Introductory Topics in Sociology (1 Unit)** Introduction to different key issues in the field. Topics vary. May be repeated for credit with a different topic. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 277-0 Native Society: Past and Present (1 Unit)** Provides an overview of the culture and history of Native groups and how these histories influence modern Native America. Explores the current economic and social experiences of Indians and tribes. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**SOCIOL 288-0 Institutions and Society (1 Unit)** Institutions in a broad societal context. How institutional frameworks apply to government, family, education, and the environment; implications of institutions.

POLI\_SCI 388-0 and SOCIOl 288-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOl 301-0 The City: Urbanization and Urbanism (1 Unit)** Theories of urbanization, housing, jobs, race and class, segregation, community and social networks politics, reform policies and planning. Research projects. *Social Behavioral Sciences Distro Area*

**SOCIOl 302-0 Sociology of Organizations (1 Unit)** Structure and function of formal organizations, especially in business and government. Stratification, social control, and conflict. Discretion, rules, and information in achieving goals. Modes of participation. Development of informal norms. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOl 303-0 Analysis and Interpretation of Social Data (1 Unit)** Introduction to quantitative methods: the interpretation of descriptive statistics, relationships between variables, multiple regression, and the logic of inferential statistics. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**SOCIOl 304-0 Politics of Racial Knowledge (1 Unit)** Major developments in the history of racial knowledge, from Enlightenment philosophy to contemporary genomics. The intersection of politics and science in creating notions of race. Students are encouraged to take SOCIOl 208-0 prior to enrolling. *Social Behavioral Sciences Distro Area*

**SOCIOl 305-0 Population Dynamics (1 Unit)** Social causes and consequences of population dynamics (fertility, mortality, marriage, divorce, migration) and population structures (age, sex, size, density). Relationship between population changes and health, environmental, and economic outcomes. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOl 306-0 Sociological Theory (1 Unit)** Sociological perspectives developed by classic theorists. Elucidation and testing of sociological principles in contemporary research. Primarily for sociology majors. Open to others with consent of instructor. *Advanced Expression*

**SOCIOl 307-0 School and Society (1 Unit)** Reciprocal influences between formal institutions of education and the broader society from different theoretical perspectives. Internal organization of schools, inequality in educational settings and outcomes by gender, class, and race/ethnicity. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOl 309-0 Political Sociology (1 Unit)** Selected topics in political economy and sociology: revolutions, the development of the modern state, third world development, international conflict, politics of memory and civil society. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOl 310-0 Sociology of the Family (1 Unit)** Influence of socioeconomic and other structural and cultural resources and constraints on family structure and dynamics. Historical and comparative perspectives on the modern family. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOl 311-0 Food, Politics and Society (1 Unit)** Social groups, institutions, and policies shaping food production, distribution, and consumption around the world; their social and environmental consequences. Alternatives to existing food systems. SOCIOl 311-0 and ENVR\_POL 311-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**SOCIOl 314-0 Sociology of Religion (1 Unit)** Sociological approach to the study of American religion. Communities, practices, race, gender, and politics in the shaping of religion. *Social Behavioral Sciences Distro Area*

**SOCIOl 316-0 Economic Sociology (1 Unit)** Sociological approach to production, distribution, consumption, and markets. Classic and contemporary approaches to the economy compared across social science disciplines. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOl 317-0 Global Development (1 Unit)** Exploration of the economic and social changes constituting development, focusing on comparison between the historical experience in Europe and more recent processes in Africa, Asia, and Latin America. SOCIOl 317-0 and POLI\_SCI 352-0 are taught together; may not receive credit for both courses. *Global Perspectives on Power, Justice, and Equity Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOl 318-0 Sociology of Law (1 Unit)** Sociological analysis of legal institutions such as courts, the police, and lawyers. Law, inequality, and social change. SOCIOl 318-0 is taught with LEGAL\_ST 308-0; may not receive credit for both courses. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOl 319-0 Sociology of Science (1 Unit)** Science as social system. Personality, class, and cultural factors in scientific development, creativity, choice of role, simultaneous invention, and priority disputes. Social effects on objectivity and bias. *Social Behavioral Sciences Distro Area*

**SOCIOl 320-0 Gender, Health, and Medicine (1 Unit)** Examination of the way gender organizes health and medicine, as well as how the medical system and health practices create and organize gender. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOl 321-0 Numbers, Identity & Modernity: How Calculation Shapes Who We Are & What We Know (1 Unit)** Investigation of how we make and use numbers, how we know ourselves through numbers, the kinds of authority we grant to numbers, and how numbers inform our ethics. *Ethics Values Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**SOCIOl 322-0 Sociology of Immigration (1 Unit)** Sociological approach to immigration addressing such issues as assimilation, race/ethnicity, gender, transnationalism. *Social Behavioral Sciences Distro Area*

**SOCIOl 323-0 American Subcultures and Ethnic Groups (1 Unit)** Differentiation, organization, and stratification by ethnicity, race, lifestyle, and other traits. Maintenance of subgroup boundaries and distinctiveness. Consequences of difference: identity, political and economic participation, group solidarity. *Social Behavioral Sciences Distro Area*

**SOCIOl 324-0 Global Capitalism (1 Unit)** Sociological aspects of the rise of industrial capitalism. Rise of industrial capitalism in Europe, different forms of capitalism across the world, and consequences for poverty and inequality. Development and underdevelopment. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Social Behavioral Sciences Distro Area*

**SOCIOl 325-0 Global & Local Inequalities (1 Unit)** Inequalities in economic and social status, including in income, health, politics, social policy, the family, gender, and race. Contemporary US focus but also historical and global trends. *Social Behavioral Sciences Distro Area*

**SOCIOL 327-0 Youth and Society (1 Unit)** How modern definitions of childhood and adolescence have evolved. Diversity across the lives of young people today and the development of social networks and transitions to adulthood. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 328-0 Inequality & American Society (1 Unit)** Introduction to research on social stratification and inequality, focusing on American society. Theories of distributive justice, trends, intergenerational mobility, gender and race inequality, causes and consequences of inequalities. *Social Behavioral Sciences Distro Area*

**SOCIOL 329-0 Field Research and Methods of Data Collection (1 Unit)** Practicum in firsthand data collection using observation and structured and unstructured interviewing. Issues of reliability and validity and qualitative analysis. *Advanced Expression*

**SOCIOL 330-0 Law, Markets, and Globalization (1 Unit)** The role of national and international law in recent economic globalization trends, global convergence in law, legal transplants, globalization and the environment. *Social Behavioral Sciences Distro Area*

**SOCIOL 331-0 Markets, Hierarchies & Democracies (1 Unit)** The forms and social structures for making economic and political decisions in modern societies. *Social Behavioral Sciences Distro Area*

**SOCIOL 332-0 Capitalism, Labor, and Gender (1 Unit)** Sociological perspectives on labor in the context of capitalism. Labor, gender, class, race, status, and power. Production, reproduction, technology, and occupational structure; organization of workplace. *Social Behavioral Sciences Distro Area*

**SOCIOL 334-0 Social Protest and Social Change Around the World (1 Unit)** How and why social protests can initiate major social change within societies and social groups around the world. *Social Behavioral Sciences Distro Area*

**SOCIOL 335-0 Sociology of Rational Decision Making (1 Unit)** Analysis of the role played by numerical and quantitative information in organizational decision making in the private and public sectors. *Social Behavioral Sciences Distro Area*

**SOCIOL 336-0 The Climate Crisis, Policies, and Society (1 Unit)** Examination of main impacts of climate change and of different perspectives toward mitigation and adaptation: market-based, institutionalist, bio-environmentalist, social movement, and climate justice. SOCIOL 336-0 and ENVR\_POL 336-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**SOCIOL 343-0 Social Networks (1 Unit)** Introduction to the basic concepts of network analysis. Insights about social networks impacts on families, careers, health, politics, and economic life. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 345-0 Class and Culture (1 Unit)** The role that culture plays in the formation and reproduction of social classes. Class socialization, culture and class boundaries, class identities and class consciousness, culture and class action. *Social Behavioral Sciences Distro Area*

**SOCIOL 348-0 Race, Politics, and the Law (1 Unit)** Current role of race and racism from multiple disciplinary perspectives. Application to contemporary legal and political issues. How law deals with racial inequality. LEGAL\_ST 348-0 and SOCIOL 348-0 are taught together; may not receive credit for both courses. Prerequisite: LEGAL\_ST 206-0, SOCIOL 206-0, SOCIOL 208-0, LEGAL\_ST 308-0, or SOCIOL 318-0. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 356-0 Sociology of Gender (1 Unit)** Gender and issues of social reproduction and social change with sexuality and reproduction emphasized. *Advanced Expression Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl U.S. Perspectives on Power, Justice, and Equity*

**SOCIOL 376-0 Topics in Sociological Analysis (1 Unit)** Advanced work on special topics in sociological study. May be repeated for credit with different topic. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 379-0 Understanding Genocide (1 Unit)** Key debates in the comparative study of genocide. Why genocide occurs, why people become killers, how these processes relate to each other. POLI\_SCI 389-0 and SOCIOL 379-0 are taught together; may not receive credit for both courses. *Social Behavioral Sciences Distro Area*

**SOCIOL 392-0 Seminars (1 Unit)** Close focus on key issues in sociology. In-depth analyses of a range of current social issues from a sociological perspective with focus on development of critical thinking and research skills. *Social Behavioral Sciences Distro Area Social and Behavioral Science Foundational Discipl*

**SOCIOL 398-1 Senior Research Seminar (1 Unit)** Independent research projects carried out under faculty supervision. *Advanced Expression*

**SOCIOL 398-2 Senior Research Seminar (1 Unit)** Independent research projects carried out under faculty supervision. Prerequisite: B- or better in SOCIOL 398-1. *Advanced Expression*

**SOCIOL 399-0 Independent Study (1 Unit)** Consent of department required. May reenroll for consecutive quarters.

## Sociology Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Department Courses (12 units)</b>	
2 sociology courses at the 100 or 200 level <sup>1</sup>	
3 courses in the methods of sociological research:	
SOCIOL 226-0	Sociological Analysis (recommended to be taken by sophomore year)
SOCIOL 303-0	Analysis and Interpretation of Social Data <sup>2</sup>
SOCIOL 329-0	Field Research and Methods of Data Collection
1 course in sociological theory	
SOCIOL 306-0	Sociological Theory
6 sociology courses at the 300 level <sup>3</sup>	
<b>Related Courses (4 units)</b>	
4 related courses <sup>4</sup>	

<sup>1</sup> This does not include SOCIOL 101-7 College Seminar, SOCIOL 101-8 First-Year Writing Seminar, or SOCIOL 226-0 Sociological Analysis.

<sup>2</sup> Students taking MATH 385-0 for the adjunct major in MMSS may double-count this class in place of SOCIOL 303-0 (for triple major limitations see MMSS Adjunct Major (p. 361)).

<sup>3</sup> The following applies:

- SOCIAL 398-1 and SOCIAL 398-2 Senior Research Seminars may count as 2 of the 6 courses.
- SOCIAL 376-0 Topics in Sociological Analysis may count multiple times with different topics and advisor approval.
- SOCIAL 399-0 Independent Study may be taken more than once, but only one unit may count toward the major.
- With adviser approval, students may count either 1 Chicago Field Studies (p. 267) unit of credit or 1 Global Engagement Studies Institute (<https://gesi.northwestern.edu>) unit of credit toward their 300-level course requirement. If students wish to count both a CFS and a GESI unit, they will be permitted with adviser approval to count the CFS credit toward the 300-level course requirement and the GESI credit toward the related courses requirement. If students wish to count a 4-credit CFS course as 2 courses toward the 300-level course requirement, they may submit a written appeal to the director of undergraduate studies, who will determine whether the level, amount, and kind of work merits this decision.

<sup>4</sup> Related courses may include 300-level courses in African American studies, American studies, anthropology, Asian American studies, communication studies, economics, gender and sexuality studies, global health studies, history, international studies, Latina and Latino studies, legal studies, linguistics, philosophy, political science, psychology, science in human culture, statistics, or other fields. Students doing the adjunct major in MMSS may use four MMSS classes to complete the related course requirement. Related courses must be approved by an adviser.

## Honors in Sociology

Majors with strong academic records and an interest in pursuing honors should enroll in both quarters of Senior Research Seminar (SOCIAL 398-1 and SOCIAL 398-2). All sociology majors are eligible to enroll in this sequence of courses and are encouraged to write a thesis. Both courses may count toward the requirements for the major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the department website (<https://www.sociology.northwestern.edu/undergraduate/research-funding/senior-thesis.html>) and/or the director of undergraduate studies and see Honors in the Major (p. 222).

## Sociological Research Minor

The minor concentration in sociological research prepares students to carry out their own research by offering an introduction to the discipline, followed by an array of courses in quantitative and qualitative methods. Students learn about the gathering and preparation of data for analysis as well as a variety of techniques and methods for presenting information, arguments, and conclusions; 2 300-level courses allow students to see how these methods are used in practice.

Course	Title
<b>Minor in Sociological Research Requirements (6 units)</b>	
1 sociology course at the 100 or 200 level	<sup>1</sup>
3 courses on sociological research methods	
SOCIAL 226-0	Sociological Analysis
SOCIAL 303-0	Analysis and Interpretation of Social Data (or equivalent)

SOCIAL 329-0	Field Research and Methods of Data Collection
2 sociology courses at the 300 level	<sup>2,3,4</sup>

<sup>1</sup> This does not include SOCIAL 101-7 College Seminar, SOCIAL 101-8 First-Year Writing Seminar, or SOCIAL 226-0 Sociological Analysis.

<sup>2</sup> SOCIAL 399-0 Independent Study may be taken more than once, but only 1 unit may count toward the minor.

<sup>3</sup> SOCIAL 376-0 Topics in Sociological Analysis may count twice with advisor approval if each course addresses different topics.

<sup>4</sup> Students will be permitted to apply either 1 Chicago Field Studies (p. 267) (CFS) or 1 Global Engagement Studies Institute (<https://gesi.northwestern.edu>) (GESI) unit of credit to their 300-level course requirement, if an advisor deems the course academically sufficient.

## Sociological Studies Minor

The minor in sociological studies introduces basic information about the social world and provides the rudimentary tools to understand it. It prepares students to compare, evaluate, and critically analyze information about various institutions, processes of stratification, and social change.

Course	Title
<b>Minor in Sociological Studies Requirements (7 units)</b>	
2 sociology courses at the 100 or 200 level	<sup>1</sup>
1 course on sociological research methods	
SOCIAL 226-0	Sociological Analysis
4 sociology courses at the 300 level	<sup>2,3,4</sup>

<sup>1</sup> This does not include SOCIAL 101-7 College Seminar, SOCIAL 101-8 First-Year Writing Seminar, or SOCIAL 226-0 Sociological Analysis.

<sup>2</sup> SOCIAL 399-0 Independent Study may be taken more than once, but only 1 unit may count toward the minor.

<sup>3</sup> SOCIAL 376-0 Topics in Sociological Analysis may count twice with department advisor approval if each course addresses different topics.

<sup>4</sup> Students will be permitted to apply either 1 Chicago Field Studies (p. 267) (CFS) or 1 Global Engagement Studies Institute (<https://gesi.northwestern.edu>) (GESI) unit of credit to their 300-level course requirement, if an advisor deems the course academically sufficient.

## Social and Behavioral Sciences

Social and Behavioral Sciences (FD-SBS) is one of the six Foundational Disciplines that are part of the WCAS bachelor's degree.

We all exist in a complex web of social relationships. Social phenomena, ranging from the most intimate interpersonal interactions to widespread global conflicts, influence the quality of our lives in countless ways. Social scientists use qualitative and quantitative methodologies to help us understand how we influence, and are influenced by, societal forces. Courses in this area introduce students to theories, methodological approaches, and empirical research findings pertaining to a full range of the human experience, from the level of the individual to that of familial, cultural, political, and institutional structures. Through study of the social sciences, students develop a deeper understanding of their own behavior as well as the complex problems of modern society.

## Learning Objectives for FD-SBS

Courses in the Social and Behavioral Sciences prepare students to meet three or more of the following objectives:

- Recognize and articulate reciprocal relationships between societal forces (e.g., norms, laws, organizational structures), psychological forces (e.g., traits, motives, attitudes), and the behaviors of individuals and groups
- Demonstrate knowledge and understanding of social science theories related to the influence of culture and power on the behavior of individuals, interpersonal relationships, and/or group dynamics
- Use appropriate quantitative or qualitative research methodologies to observe, describe, understand, and predict human behavior and/or institutional actions
- Develop the ability to critique theories, claims, and policies in the social and behavioral sciences through careful evaluation of an argument's major assertions, assumptions, evidential basis, and explanatory utility
- Reflect upon the way in which theories and research from the social and behavioral sciences help elucidate the factors underlying contemporary social issues, social problems, and/or ethical dilemmas in the U.S. and/or abroad, as well as inform potential solutions to societal problems

## FD-SBS Courses

Courses approved for the 2024-2025 academic year.

Course	Title
ANTHRO 211-0	Culture & Society
ANTHRO 214-0	Archaeology: Unearthing History
ANTHRO 215-0	The Study of Culture through Language
ANTHRO 221-0	Social and Health Inequalities
ANTHRO 235-0	Language in Asian America
ANTHRO 238-0	Food in Culture & Society
ANTHRO 322-0	Introduction to Archaeology Research Design & Methods
ANTHRO 326-0	Archaeologies of Sustainability and Collapse
ANTHRO 357-0	Biocultural Perspectives on Water Insecurity
ANTHRO 368-0	Latina and Latino Ethnography
ANTHRO 382-0	Political Ecology
ANTHRO 383-0	Environmental Anthropology
ANTHRO 389-0	Ethnographic Methods and Analysis
ASIAN_AM 218-0	Asian/Black Historical Relations in the U.S.
ASIAN_AM 235-0	Language in Asian America
ASIAN_AM 251-0	Introduction to Critical Mixed Race Studies
BLK_ST 214-0	Comparative Race and Ethnic Studies
BLK_ST 215-0	Introduction to Black Social & Political Life
BLK_ST 218-0	Asian/Black Historical Relations in the U.S.
BLK_ST 236-0	Introduction to Black Studies
BLK_ST 251-0	Introduction to Critical Mixed Race Studies
BLK_ST 317-0	Black Political Thought
BLK_ST 320-0	Social Meaning of Race
BLK_ST 325-0	Education for Black Liberation
BLK_ST 327-0	Politics of Black Popular Culture
BLK_ST 334-0	Gender and Black Masculinity
BLK_ST 365-0	Black Chicago
BUS_INST 303-0	Leadership in Organizations
COG SCI 110-0	Introduction to Cognitive Science
COG SCI 207-0	Introduction to Cognitive Modeling
COG SCI 211-0	Learning, Representation & Reasoning
COG SCI 345-0	Presenting Ideas & Data
COMM_ST 381-0	Media, Movements, & Social Change
ECON 159-0	Doing Good
ECON 201-0	Introduction to Macroeconomics
ECON 202-0	Introduction to Microeconomics
ECON 310-1	Microeconomics
ECON 311-0	Macroeconomics
ENVR_POL 211-0	Food and Society: An Introduction
ENVR_POL 212-0	Environment and Society
ENVR_POL 251-0	The Politics of Disaster: A Global Environmental History
ENVR_POL 337-0	Hazard, Disaster and Society
ENVR_POL 338-0	Environmental Justice
ENVR_POL 339-0	Silent but Loud: Negotiating Health in a Cultural, Food, Poverty, Environ. Caste
ENVR_POL 340-0	Global Environments and World History
ENVR_POL 360-0	Animal Law
ENVR_POL 383-0	Environmental Anthropology
ENVR_POL 384-0	Political Ecology
ENVR_POL 385-0	Archaeologies of Sustainability and Collapse
GBL_HLTH 201-0	Introduction to Global Health
GBL_HLTH 221-0	Beyond Porn: Sexuality, Health and Pleasure
GBL_HLTH 222-0	The Social Determinants of Health
GBL_HLTH 303-0	(Re)mixing Qualitative Methods
GBL_HLTH 306-0	Biomedicine and Culture
GBL_HLTH 309-0	Biomedicine and World History
GBL_HLTH 317-0	Native American Health Research & Prevention
GBL_HLTH 318-0	Community-based Participatory Research Course
GBL_HLTH 319-0	Trauma and its Afterlives
GBL_HLTH 320-0	Qualitative Research Methods in Global Health
GBL_HLTH 321-0	War and Public Health
GBL_HLTH 323-0	Global Health from Policy to Practice
GBL_HLTH 326-0	Native Nations, Healthcare Systems, & U.S. Policy
GBL_HLTH 337-0	Hazard, Disaster and Society
GBL_HLTH 338-0	Environmental Justice
GBL_HLTH 339-0	Silent but Loud: Negotiating Health in a Cultural, Food, Poverty, Environ. Caste
GBL_HLTH 340-0	Mental Health and the Arts
GBL_HLTH 357-0	Biocultural Perspectives on Water Insecurity
GERMAN 213-0	History, Politics, and Culture in 21st Century German
GNDR_ST 221-0	Beyond Porn: Sexuality, Health and Pleasure
GNDR_ST 331-0	Sociology of Gender and Sexuality
GNDR_ST 332-0	Gender, Sexuality, and Health
GNDR_ST 340-0	Gender, Sexuality, and the Law
HISTORY 215-0	History of the American Family
HISTORY 248-0	Global Legal History
HISTORY 249-0	The End of Citizenship
HISTORY 251-0	The Politics of Disaster: A Global Environmental History
HISTORY 254-0	Entrepreneurship: A Global History
HISTORY 255-1	African Civilizations
HISTORY 260-2	History of Modern Latin America
HISTORY 353-0	History of Capitalism, 1500-1850
HISTORY 354-0	History of Socialism
HISTORY 367-0	History of Mexico

HISTORY 370-0	Music and Nation in Latin America	POLI_SCI 336-0	Immigration Politics and Policy
HISTORY 376-0	Global Environments and World History	POLI_SCI 337-0	Gender and Politics
HISTORY 379-0	Biomedicine and World History	POLI_SCI 338-0	Labor Politics in America
HISTORY 386-3	Southeast Asia: Decolonization & Independence	POLI_SCI 340-0	International Relations Theory
HUM 213-0	Humanities in the World IV	POLI_SCI 341-0	International Political Economy
HUM 220-0	Health, Biomedicine, Culture, and Society	POLI_SCI 343-0	Politics of International Law
HUM 325-3	Humanities in the Digital Age	POLI_SCI 344-0	U.S. Foreign Policy
HUM 370-3	Special Topics in the Humanities	POLI_SCI 345-0	National Security
INTL_ST 383-1	Elliott Scholars Program: Foundation Topics in Global Affairs	POLI_SCI 346-0	European Union in International Affairs
		POLI_SCI 348-0	Globalization
INTL_ST 393-SA	Development in the Global Context: Participation, Power, and Social Change	POLI_SCI 350-0	Social Movements
LATINO 203-0	Introduction to Latina & Latino Cultural Studies	POLI_SCI 351-0	Politics of the Middle East
LATINO 392-0	Topics in Latina and Latino Social and Political Issues	POLI_SCI 352-0	Global Development
LEGAL_ST 206-0	Law and Society	POLI_SCI 353-0	Politics of Latin America
LEGAL_ST 207-0	Legal Studies Research Methods	POLI_SCI 354-0	Politics of Southeast Asia
LEGAL_ST 248-0	Global Legal History	POLI_SCI 355-0	Politics of China
LEGAL_ST 308-0	Sociology of Law	POLI_SCI 356-0	Constitutional Challenges in Comparative Perspective
LEGAL_ST 315-0	Corporation in US Law and Culture	POLI_SCI 359-0	Politics of Africa
LEGAL_ST 332-0	Constitutional Law I	POLI_SCI 361-0	Democracy and Autocracy
LEGAL_ST 333-0	Constitutional Law II: Civil and Political Rights	POLI_SCI 362-0	Politics of Europe
LEGAL_ST 340-0	Gender, Sexuality, and the Law	POLI_SCI 364-SA	France: Politics, Culture, & Society
LEGAL_ST 348-0	Race, Politics, and the Law	POLI_SCI 374-0	Politics of Capitalism
LEGAL_ST 350-0	Psychology and the Law	POLI_SCI 376-0	Civil Wars
LEGAL_ST 356-0	Constitutional Challenges in Comparative Perspective	POLI_SCI 377-0	Drugs and Politics
LEGAL_ST 360-0	Animal Law	POLI_SCI 378-0	America and the World
LEGAL_ST 383-0	Gender, Sexuality and The Carceral State	POLI_SCI 382-0	Religion, Law, & Politics: Politics of Religious Diversity
LING 220-0	Language and Society	POLI_SCI 383-0	War and Change in International Politics
LING 312-0	Experimental Sociolinguistics	POLI_SCI 384-0	International Responses to Mass Atrocities
LING 315-0	Experimental Approaches to Word Form Processing	POLI_SCI 388-0	Institutions and Society
LING 320-0	Sociolinguistics	PSYCH 110-0	Introduction to Psychology
LING 321-0	Bilingualism	PSYCH 213-0	Social Psychology
MENA 290-3	Introductory Topics in Middle East and North African Studies	PSYCH 215-0	Psychology of Personality
MENA 390-3	Advanced Topics in Middle East & North African Studies	PSYCH 221-0	Introduction to Neuroscience
		PSYCH 228-0	Cognitive Psychology
PHIL 225-0	Minds and Machines	PSYCH 244-0	Developmental Psychology
PHIL 253-0	Introduction to the Philosophy of Language	PSYCH 248-0	Health Psychology
POLI_SCI 201-0	Introduction to Political Theory	PSYCH 303-0	Psychopathology
POLI_SCI 211-0	Introduction to Interpretive Methods in Political Science	PSYCH 313-0	Relationship Science
POLI_SCI 220-0	American Government and Politics	PSYCH 317-0	The Holocaust: Psychological Themes & Perspectives
POLI_SCI 230-0	Introduction to Law in the Political Arena	PSYCH 328-0	Brain Damage and the Mind
POLI_SCI 240-0	Introduction to International Relations	PSYCH 333-0	Psychology of Thinking
POLI_SCI 250-0	Introduction to Comparative Politics	PSYCH 340-0	Psychology and Law
POLI_SCI 320-0	The American Presidency	PSYCH 345-0	Presenting Ideas & Data
POLI_SCI 321-0	Urban Politics	RELIGION 382-0	Religion, Law, & Politics: Politics of Religious Diversity
POLI_SCI 323-0	Public Opinion and Voting Behavior	SOCIAL 110-0	Introduction to Sociology
POLI_SCI 324-0	Political Parties and Elections	SOCIAL 202-0	Social Problems
POLI_SCI 325-0	Congress and the Legislative Process	SOCIAL 206-0	Law and Society
POLI_SCI 326-0	Race and Public Policy	SOCIAL 207-0	Cities in Society
POLI_SCI 327-0	African American Politics	SOCIAL 208-0	Race and Society
POLI_SCI 328-0	Public Policy	SOCIAL 210-0	Families and Societies
POLI_SCI 332-0	Constitutional Law I	SOCIAL 211-0	Food and Society: An Introduction
POLI_SCI 333-0	Constitutional Law II: Civil and Political Rights	SOCIAL 212-0	Environment and Society
POLI_SCI 334-0	Latino Politics	SOCIAL 215-0	Economy and Society
POLI_SCI 335-0	Political Psychology	SOCIAL 216-0	Gender and Society
		SOCIAL 218-0	Education and Inequality: Focus on Chicago
		SOCIAL 220-0	Health, Biomedicine, Culture, and Society
		SOCIAL 223-0	Masculinities and Society

SOCIOL 227-0	Legal Studies Research Methods	SPANISH 115-1	Accelerated Elementary Spanish
SOCIOL 235-0	Critical Thought on Race and Ethnicity	& SPANISH 115-2	and Accelerated Elementary Spanish
SOCIOL 276-0	Introductory Topics in Sociology	SPANISH 121-1	Intermediate Spanish
SOCIOL 288-0	Institutions and Society	& SPANISH 121-2	and Intermediate Spanish
SOCIOL 302-0	Sociology of Organizations	& SPANISH 121-3	and Intermediate Spanish
SOCIOL 305-0	Population Dynamics	SPANISH 125-0	Accelerated Intermediate Spanish
SOCIOL 307-0	School and Society	SPANISH 127-0	Accelerated Intermediate Spanish for Heritage Language Learners
SOCIOL 309-0	Political Sociology	SPANISH 200-0	Advanced Spanish for Heritage Language Learners
SOCIOL 310-0	Sociology of the Family	SPANISH 201-0	Advanced Spanish I: Contemporary Latin America
SOCIOL 316-0	Economic Sociology	SPANISH 202-0	Conversation on Current Topics
SOCIOL 317-0	Global Development	SPANISH 204-0	Advanced Spanish II: Activism in Times of Political Change
SOCIOL 318-0	Sociology of Law	SPANISH 205-0	Spanish for Professions: Health Care
SOCIOL 320-0	Gender, Health, and Medicine	SPANISH 206-0	Spanish for Professions: Business
SOCIOL 327-0	Youth and Society	SPANISH 208-0	Spanish and the Community
SOCIOL 343-0	Social Networks	SPANISH 280-0	Introduction to Spanish Linguistics
SOCIOL 348-0	Race, Politics, and the Law	SPANISH 281-0	Spanish Phonetics and Phonology
SOCIOL 356-0	Sociology of Gender	SPANISH 301-0	Topics in Language
SOCIOL 376-0	Topics in Sociological Analysis	SPANISH 302-0	Advanced Grammar
SOCIOL 392-0	Seminars		

## Spanish & Portuguese

spanish-portuguese.northwestern.edu

The Department of Spanish & Portuguese offers courses in language, literature, and culture that speak to a variety of interests, whether focused on Latin American, Iberian, US Latino, Lusophone African traditions, or some aspect of literature, language, or culture that cuts across geographic divides. Instruction in most courses is in Spanish or Portuguese, and the development of fluency in reading, speaking, and writing the language is an important goal of courses at all levels. The major and minor programs offered in Spanish and Portuguese are flexible and depend on students' initiative in pursuing particular interests within a framework of simple rules. Each student's major or minor program is subject to the approval of an adviser. Students who study Spanish are encouraged to also study Portuguese.

The Department of Spanish & Portuguese encourages all its students to study abroad, whether in the programs in Spain approved by Northwestern, the programs in Mexico, Argentina, or Chile sponsored by Cooperative Programs in the Americas, the program at Fundação Getúlio Vargas in Rio de Janeiro, or other programs approved by the University's Global Learning Office (<https://www.northwestern.edu/abroad/>).

## The Teaching of Spanish

Weinberg College students pursuing a major in Spanish who also wish to be certified for secondary teaching must be admitted to the Secondary Teaching Program (p. 130) in the School of Education and Social Policy and complete all requirements as outlined in the SESP chapter of this catalog. Students are urged to contact the Office of Student Affairs in SESP as early as possible in their academic careers.

## Courses

### Spanish Language Classes

Course	Title
SPANISH 101-1	Elementary Spanish
& SPANISH 101-2	and Elementary Spanish
& SPANISH 101-3	and Elementary Spanish
SPANISH 115-1	Accelerated Elementary Spanish
& SPANISH 115-2	and Accelerated Elementary Spanish
SPANISH 121-1	Intermediate Spanish
& SPANISH 121-2	and Intermediate Spanish
& SPANISH 121-3	and Intermediate Spanish
SPANISH 125-0	Accelerated Intermediate Spanish
SPANISH 127-0	Accelerated Intermediate Spanish for Heritage Language Learners
SPANISH 200-0	Advanced Spanish for Heritage Language Learners
SPANISH 201-0	Advanced Spanish I: Contemporary Latin America
SPANISH 202-0	Conversation on Current Topics
SPANISH 204-0	Advanced Spanish II: Activism in Times of Political Change
SPANISH 205-0	Spanish for Professions: Health Care
SPANISH 206-0	Spanish for Professions: Business
SPANISH 208-0	Spanish and the Community
SPANISH 280-0	Introduction to Spanish Linguistics
SPANISH 281-0	Spanish Phonetics and Phonology
SPANISH 301-0	Topics in Language
SPANISH 302-0	Advanced Grammar

## Spanish Literature and Culture Courses

Course	Title
SPANISH 250-0	Literature in Spain before 1700
SPANISH 251-0	Literature in Spain since 1700
SPANISH 260-0	Literature in Latin America before 1888
SPANISH 261-0	Literature in Latin America since 1888
SPANISH 280-0	Introduction to Spanish Linguistics
SPANISH 281-0	Spanish Phonetics and Phonology
SPANISH 301-0	Topics in Language
SPANISH 302-0	Advanced Grammar
SPANISH 323-0	Cervantes' Don Quixote
SPANISH 332-0	Avant-Garde Writers and Experimental Fiction in Spain
SPANISH 333-0	The Spanish Civil War. The Good Fight
SPANISH 335-0	Modern Fiction in Spain: Studies in Genre
SPANISH 340-0	Colonial Latin American Literature
SPANISH 341-0	Latin American Modernismo
SPANISH 342-0	Race and Representation in Latin America
SPANISH 343-0	Latin American Avant-Gardes
SPANISH 344-0	Borges
SPANISH 345-0	Reading the 'Boom'
SPANISH 346-0	Testimonial Narrative in Latin America
SPANISH 347-0	Literature and Revolution in Latin America
SPANISH 348-0	Readings in Latin American Short Fiction
SPANISH 350-0	Visual Culture in Latina/o America and Spain
SPANISH 360-0	Spain: Studies in Culture and Society
SPANISH 361-0	Latin America: Studies in Culture and Society
SPANISH 362-0	Citizenship and Urban Violence in Latin America
SPANISH 363-0	Topics in US Latina/o Literary and Cultural Studies
SPANISH 364-0	Cultural Borders/Border Cultures
SPANISH 380-0	Topics in Film in Latin America and/or Spain
SPANISH 395-0	Topics in Latin American, Latina and Latino, and/or Iberian Cultures
SPANISH 399-0	Independent Study

## Spanish Literature and Culture Courses with Readings and Discussion in English

Course	Title
SPANISH 223-0	Cervantes (Taught in English)
SPANISH 225-0	Nationalism, Borders, and Immigration in Spain
SPANISH 231-0	The "New" Latin American Narrative (Taught in English)
SPANISH 232-0	Discovering Jewish Latin America
SPANISH 277-0	Introduction to Latinx Literature
SPANISH 397-0	Topics in Latin American, Latina & Latino, and Iberian Literatures and Cultures (Taught in English)

## Portuguese Language Courses

Course	Title
PORT 101-1	Elementary Portuguese
& PORT 101-2	and Elementary Portuguese
& PORT 101-3	and Elementary Portuguese
PORT 115-1	Portuguese for Speakers of Spanish and other Romance Languages
& PORT 115-2	and Portuguese for Speakers of Spanish and other Romance Languages
PORT 121-1	Intermediate Portuguese
& PORT 121-2	and Intermediate Portuguese
& PORT 121-3	and Intermediate Portuguese
PORT 201-0	Reading and Speaking Portuguese
PORT 202-0	Reading and Writing Portuguese
PORT 210-0	Icons, Legends, and Myths in Brazil
PORT 303-0	Topics in Advanced Portuguese
PORT 399-0	Independent Study

## Portuguese Literature and Culture Courses with Readings and Discussion in English

Course	Title
PORT 210-0	Icons, Legends, and Myths in Brazil
PORT 380-0	Contemporary Brazil: Literature and Film
PORT 396-0	Topics in Lusophone Cultures

## Programs of Study

- Spanish Major (p. 436)
- Spanish Minor (p. 436)
- Portuguese Language and Lusophone Cultures Minor (p. 437)

## Spanish Courses

**SPANISH 101-1 Elementary Spanish (1 Unit)** First course of a three-quarter sequence in introductory Spanish, designed for students who have never studied Spanish or studied Spanish less than two years in high school. Students will learn Spanish in order to use it beyond the classroom in meaningful and authentic ways at the Novice level of proficiency. This means that students will be able to communicate short messages on everyday topics that affect them directly.

**SPANISH 101-2 Elementary Spanish (1 Unit)** Second course of a three-quarter sequence in introductory Spanish. Students will learn Spanish in order to use it beyond the classroom in meaningful and authentic ways at the Novice High-Intermediate Low level of proficiency. This means that students will be able to communicate short messages on everyday topics that affect them directly. Prerequisite: SPANISH 101-1.

**SPANISH 101-3 Elementary Spanish (1 Unit)** Third course of a three-quarter sequence in introductory Spanish. Students will learn Spanish in

order to use it beyond the classroom in meaningful and authentic ways at the Intermediate Low level of proficiency. This means that students will be able to communicate messages on everyday topics that affect them directly. Prerequisite: SPANISH 101-2.

**SPANISH 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SPANISH 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**SPANISH 115-1 Accelerated Elementary Spanish (1 Unit)** First course of a two-quarter sequence in introductory Spanish designed for students with previous experience in Spanish. Students will learn Spanish in order to use it beyond the classroom in meaningful and authentic ways at the Novice High-Intermediate Low level of proficiency. This means that students will be able to communicate short messages on everyday topics that affect them directly. Offered in winter. Prerequisite: sufficient score on Spanish Language Placement Exam.

**SPANISH 115-2 Accelerated Elementary Spanish (1 Unit)** Second course of a two-quarter sequence in introductory Spanish designed for students with previous experience in Spanish. Students will learn Spanish in order to use it beyond the classroom in meaningful and authentic ways at the Intermediate Low level of proficiency. This means that students will be able to communicate messages on everyday topics that affect them directly. Offered in spring. Prerequisite: SPANISH 115-1.

**SPANISH 121-1 Intermediate Spanish (1 Unit)** First course in a three-quarter sequence in Intermediate Spanish. Further development of communicative proficiency with an emphasis on the functional use of Spanish and cultural content and reflection. Prerequisite: SPANISH 101-3, SPANISH 115-2, or sufficient score on Spanish Language Placement Exam.

**SPANISH 121-2 Intermediate Spanish (1 Unit)** Second course in a three-quarter sequence in Intermediate Spanish. Further development of communicative proficiency with an emphasis on the functional use of Spanish and cultural content and reflection. Prerequisite: SPANISH 121-1.

**SPANISH 121-3 Intermediate Spanish (1 Unit)** Third course in a three-quarter sequence in Intermediate Spanish. Further development of communicative proficiency with an emphasis on the functional use of Spanish and cultural content and reflection. Prerequisite: SPANISH 121-2.

**SPANISH 125-0 Accelerated Intermediate Spanish (1 Unit)** Further development of communicative proficiency at the intermediate high level with an emphasis on the Hispanic world and the development of cultural competence. This means that students will be able to communicate familiar and some researched topics, often across various time frames. Offered in fall only. Prerequisite: AP score of 3 or sufficient score on Spanish Language Placement Exam.

**SPANISH 127-0 Accelerated Intermediate Spanish for Heritage Language Learners (1 Unit)** The main purpose of this course is to build upon the language knowledge that students bring to the classroom and advance their proficiency of Spanish for multiple contexts. The course content will generate opportunities for students to hone their oral and written skills, to become acquainted with more formal registers of Spanish and to deepen their sense of pride in their linguistic and cultural heritage in order to communicate more effectively and more confidently in the target

language. Offered in fall only. Prerequisite: AP score of 3 or sufficient score on Spanish Language Placement Exam.

**SPANISH 190-SA Intermediate Spanish Grammar (1 Unit)** Development of grammar, vocabulary, and writing skills through emphasis on cultural content and functional use of language in Spanish-speaking countries. Restricted to students participating in Northwestern study abroad programs. Prerequisites: SPANISH 101-3, SPANISH 115-2, SPANISH 121-3, SPANISH 125-0, or SPANISH 127-0.

**SPANISH 191-SA Intermediate Spanish Conversation (0 Unit)** Development of speaking strategies and structures through examination of cultural topics and daily life in Spanish-speaking countries. Emphasis on accurate formal and informal conversation and specialized vocabulary. Restricted to students participating in Northwestern study abroad programs. Prerequisites: SPANISH 101-3, SPANISH 115-2, SPANISH 121-3, SPANISH 125-0, or SPANISH 127-0.

**SPANISH 199-SA Language in Context: Contemporary Spain (1 Unit)** An introduction to the culture and sociopolitical issues of contemporary Spain is the basis for reviewing and solidifying communicative functions that pose certain challenges to Spanish learners, and for fully integrating all language skills in Spanish. Restricted to students on Northwestern study abroad programs. Prerequisites: SPANISH 101-3, SPANISH 115-2, SPANISH 121-3, SPANISH 125-0, or SPANISH 127-0.

**SPANISH 200-0 Advanced Spanish for Heritage Language Learners (1 Unit)** This course is designed to prepare Spanish heritage learners for advanced studies in the target language by examining contemporary topics within the Spanish-speaking world. It offers insights into how historical events have shaped the present in Latin America, Spain, and the U.S. Latino/a/x communities. Students will foster a critical awareness of their bilingual abilities and improve their reading and writing skills. It is tailored to students who grew up using Spanish as their primary language at home or in their communities. Prerequisite: Spanish heritage learners who have completed SPANISH 127-0, AP of 4, or Departmental Placement. *U.S. Perspectives on Power, Justice, and Equity*

**SPANISH 201-0 Advanced Spanish I: Contemporary Latin America (1 Unit)** This course is designed to develop all modes of communication in Spanish as students progress towards the advanced low level of proficiency through the interpretation and analysis of sociopolitical topics in Latin America. In addition, the critical examination of authentic materials will help students explore how the recent history of Latin America has shaped its present. Prerequisite: SPANISH 121-3, 125-0, 199-0, AP of 4, or Departmental Placement/Reassessment.

**SPANISH 202-0 Conversation on Current Topics (1 Unit)** Development of speaking strategies and structures through examination of culturally related topics in the Spanish-speaking world. Emphasis on formal conversation and specialized vocabulary. SPANISH 202-SA restricted to students on Northwestern study abroad programs. Prerequisites: SPANISH 200-0 or SPANISH 201-0.

**SPANISH 202-SA Conversation on Current Topics (1 Unit)** Development of speaking strategies and structures through examination of culturally related topics in the Spanish-speaking world. Emphasis on formal conversation and specialized vocabulary. SPANISH 202-SA restricted to students on Northwestern study abroad programs. Prerequisites: SPANISH 200-0 or SPANISH 201-0.

**SPANISH 204-0 Advanced Spanish II: Artivism in Times of Political Change (1 Unit)** This course is designed to develop all communication modes through the interpretation and analysis of multimodal texts centered around politically and socially engaged art. The course will explore the role of the creative arts in the political and social sphere in 20th-century Spain and Latin America while connecting these movements

to current times. Prerequisite: SPANISH 197-0, SPANISH 201-0, SPANISH 203-0, SPANISH 207-0, AP score of 5, or Departmental Placement (Online Placement Test and Reassessment). *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 205-0 Spanish for Professions: Health Care (1 Unit)** Advanced course to develop communication skills in Spanish for healthcare purposes. Emphasis on language skills for the medical field, specialized terminology and vocabulary, and cultural nuances. Prerequisite: SPANISH 197-0, SPANISH 201-0, AP score of 5, or department placement.

**SPANISH 206-0 Spanish for Professions: Business (1 Unit)** Advanced course to develop communication skills in Spanish for business purposes. Emphasis on language skills for the global marketplace: specialized terminology, comprehension of cultural nuances, analytical writing skills and project-based assignments. Prerequisite: SPANISH 197-0, SPANISH 201-0, AP score of 5 or department placement.

**SPANISH 208-0 Spanish and the Community (1 Unit)** The main objective of this course is the development of advanced Spanish communication skills, as well as a thorough and personal cultural knowledge of the Hispanic communities in the Chicagoland, through readings, discussions, writing, and interviews. Prerequisite: SPANISH 201 (NEW only), SPANISH 203-0, SPANISH 207-0, AP of 5, or department placement.

**SPANISH 210-0 Icons, Legends, & Myths in Latin American, Latino and/or Iberian Cultures (1 Unit)** Diverse representations of historical, literary, and popular figures, such as the caudillo, the obispo, El Cid, Don Juan, the conquistador, the gaucho, Simón Bolívar, and Evita. Prerequisite: SPANISH 204-0. *Literature Fine Arts Distro Area*

**SPANISH 215-SA Studies in Ibero-American Culture and Society (1 Unit)** Issues and debates in society, such as those around gender, race, and class, and their representation in music, architecture, visual arts, and fiction. Restricted to students on Northwestern study abroad programs. Prerequisites: SPANISH 200-0 or SPANISH 201-0.

**SPANISH 223-0 Cervantes (Taught in English) (1 Unit)** Study of Don Quixote and other selected works with attention to the historical and cultural context of the 17th century. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 225-0 Nationalism, Borders, and Immigration in Spain (1 Unit)** Interdisciplinary approach to national identity and nationalism in Spain with attention to political and cultural struggles for regional autonomy and to social conflicts arising from immigration.

**SPANISH 231-0 The "New" Latin American Narrative (Taught in English) (1 Unit)** Emphasis on novels and short fiction from the Latin American "Boom" of the 1960s and 1970s, with attention also to important precursors and recent trends. Focus on works by writers such as Julio Cortázar, Gabriel García Márquez, Manuel Puig, and Luisa Valenzuela. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 232-0 Discovering Jewish Latin America (1 Unit)** Exploration of the Jewish presence in Latin America; focus on diverse forms of cultural production (e.g., literature, testimonial writing, film, photography, theater, art, music) throughout the region. *Literature Fine Arts Distro Area*

**SPANISH 250-0 Literature in Spain before 1700 (1 Unit)** Survey of the origins of the Spanish language and the development of Spanish literature from the Middle Ages to the end of the Spanish Golden Age. Study of representative figures and major literary developments in conjunction with religious and cultural history. Prerequisite (may be taken

concurrently): SPANISH 200-0 or SPANISH 204-0. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 251-0 Literature in Spain since 1700 (1 Unit)** Survey of literature in Spain from the 18th to the 20th century. Study of representative figures and major literary developments in conjunction with political and cultural history. Prerequisite (may be taken concurrently): SPANISH 200-0 or SPANISH 204-0. *Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 260-0 Literature in Latin America before 1888 (1 Unit)** Survey of pre-Hispanic, colonial, and romantic traditions in Latin America. Focus on authors and texts such as Popul Vuh, Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, and Martín Fierro. Prerequisite (may be taken concurrently): SPANISH 200-0 or SPANISH 204-0. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 261-0 Literature in Latin America since 1888 (1 Unit)** Survey of the modern period, including modernismo, the historical avant-garde, the "Boom," and recent literary trends. Authors such as Delmira Agustini, Jorge Luis Borges, Julio Cortázar, Pablo Neruda, and Cristina Peri Rossi. Prerequisite (may be taken concurrently): SPANISH 200-0 or SPANISH 204-0. *Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 277-0 Introduction to Latinx Literature (1 Unit)** Survey of major writers and movements from the Spanish colonial era to the present, covering a range of genres and ethnicities. Taught with ENGLISH 277-0 and LATINO 277-0; may receive credit for only 1 of these courses. *Literature Fine Arts Distro Area Literature and Arts Foundational Discipline U.S. Perspectives on Power, Justice, and Equity*

**SPANISH 280-0 Introduction to Spanish Linguistics (1 Unit)** An introductory course designed to present students with an overview of the phonology, phonetics, morphology, syntax, and sociolinguistic and pragmatic elements specific to Spanish language. Prerequisite: SPANISH 200-0 or SPANISH 204-0.

**SPANISH 281-0 Spanish Phonetics and Phonology (1 Unit)** Introduction to the theory and practice of Spanish sounds and phonology. Articulation and production, classification and description, combination and syllabification, sonority sequencing, and prevalent dialects. Introduction to basic principles of ethnographic research, data collection, and analysis. Prerequisite: SPANISH 200-0 or SPANISH 204-0. *Formal Studies Distro Area*

**SPANISH 301-0 Topics in Language (1 Unit)** Special topics in historical, grammatical, or other linguistic aspects of Spanish. SA course restricted to students on the Northwestern study abroad programs. Prerequisite: SPANISH 201-0.

**SPANISH 301-SA Topics in Language (1 Unit)** Special topics in historical, grammatical, or other linguistic aspects of Spanish. SA course restricted to students on the Northwestern study abroad programs. Prerequisite: SPANISH 201-0.

**SPANISH 302-0 Advanced Grammar (1 Unit)** An advanced course designed to polish and improve language usage through in-depth study and development of grammar knowledge and skills, focusing on items most problematic for non-native speakers of Spanish. SPANISH 302-SA restricted to students on Northwestern study abroad programs. Prerequisites: SPANISH 200-0, SPANISH 204-0.

**SPANISH 302-SA Advanced Grammar (1 Unit)** An advanced course designed to polish and improve language usage through in-depth study and development of grammar knowledge and skills, focusing on items

most problematic for non-native speakers of Spanish. SPANISH 302-SA restricted to students on Northwestern study abroad programs. Prerequisites: SPANISH 200-0, SPANISH 204-0.

**SPANISH 323-0 Cervantes' Don Quixote (1 Unit)**

Close reading of Don Quijote, with attention to its historical and cultural context.

Prerequisite: SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 332-0 Avant-Garde Writers and Experimental Fiction in Spain (1 Unit)**

Aesthetic principles, modes of writing, and uses of media of avant-garde writers and artists in 20th-century Spain. The use of experimental forms in the critique of the bourgeois order and late capitalist society.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

**SPANISH 333-0 The Spanish Civil War: The Good Fight (1 Unit)**

Analysis of the Spanish Civil War (1936-39) and its effects on 20th century Spanish culture and society. Issues may include the relationship between utopic thought and artistic avant-gardes during this period; literary and filmic representations of the war; and the war's connections to World War II.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

**SPANISH 335-0 Modern Fiction in Spain: Studies in Genre (1 Unit)**

Study of literary genres (narrative, poetry, drama) or subgenres (detective fiction, autobiography, the fantastic). May be repeated for credit with different topic.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 340-0 Colonial Latin American Literature (1 Unit)**

Major texts and writers of the colonial period, including chronicles of discovery and conquest from both indigenous and Hispanic sources. Works by authors such as Inca Garcilaso de la Vega, Bartolomé de las Casas, and Sor Juana Inés de la Cruz.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 341-0 Latin American Modernismo (1 Unit)**

Significant poetry, narrative, and criticism from the late 19th and early 20th centuries. Topics such as decadence, aestheticism, the flâneur and the rastacero, cosmopolitanism, the modern city, and exoticism.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 342-0 Race and Representation in Latin America (1 Unit)**

Analysis of the history and materials concerning the representation of race in Latin American literatures and cultures. Possible topics include indigenismo, negritude, afro-latinoamérica, indigeneity, critical race theory, decolonial theory, etc. Prerequisites: SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0. *Literature Fine Arts Distro Area*

**SPANISH 343-0 Latin American Avant-Gardes (1 Unit)**

Poetry, prose, and visual art by major figures and groups in 20th century vanguard movements. Works by authors such as Roberto Arlt, Alejo Carpentier, Nicolás Guillén, Vicente Huidobro, and César Vallejo.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 344-0 Borges (1 Unit)**

The poetry, essays, and short fiction of Jorge Luis Borges.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 345-0 Reading the 'Boom' (1 Unit)**

Historical, literary, and cultural characteristics of the "Boom" in the 1960s and 1970s and the development of the "new" narrative in Latin America. Works by authors such as José Donoso, Carlos Fuentes, Gabriel García Márquez, and Mario Vargas Llosa.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Advanced Expression Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 346-0 Testimonial Narrative in Latin America (1 Unit)**

Study of the tradition of testimonial writing in Latin America with attention to cultural, political, and historical contexts and questions of truth, memory, and subjectivity. Works by authors such as Miguel Barnet, Rigoberta Menchú, Elena Poniatowska, Jacobo Timerman, and Rodolfo Walsh.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 347-0 Literature and Revolution in Latin America (1 Unit)**

Revolutionary practices in Latin American literatures as well as literary representations of revolution. Authors such as Mariano Azuela, Nellie Campobello, Roque Dalton, and Rodolfo Usigli. Prerequisite: SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area*

**SPANISH 348-0 Readings in Latin American Short Fiction (1 Unit)**

Theory and practice of Latin American short fiction. Close reading of texts by authors such as Jorge Luis Borges, Alejo Carpentier, Julio Cortázar, Rosario Ferré, and Gabriel García Márquez.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area*

**SPANISH 349-0 Critical Thought in Latin Amer (1 Unit)** This course seeks to familiarize students with Latin American intellectual traditions in the modern period through a selection of pivotal figures from the 19th to the 20th centuries. It will analyze prominent conceptual paradigms that have defined intellectual discourse in the region, such as mestizaje, hybridity, and heterogeneity. *Advanced Expression Ethical and Evaluative Thinking Foundational Disci Ethics Values Distro Area Global Perspectives on Power, Justice, and Equity*

**SPANISH 350-0 Visual Culture in Latina/o America and Spain (1 Unit)**

History and materials of Latin American, Spanish, or US Latina/o visual cultures. Possible topics: photography, exhibitions, video practice, and visual production in popular culture.

Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Advanced Expression Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 360-0 Spain: Studies in Culture and Society (1 Unit)**

Significant issues in the social, political, and cultural development of Spain. May be repeated for credit with different topic.

Prerequisite: 1 course from SPANISH 220-0, SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area*

**SPANISH 361-0 Latin America: Studies in Culture and Society (1 Unit)**

Analysis of the history of culture in Latin America with an emphasis on the intersection of politics, society, and literature and on the relationship between literary and visual culture. May be repeated for credit with different topic.

Prerequisite: 1 course from SPANISH 220-0, SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area*

**SPANISH 362-0 Citizenship and Urban Violence in Latin America (1 Unit)**

An investigation of the association between Latin America and the violence that underlies all phases of its history, particularly its urban history, through fictional and theoretical texts, films, and music. Prerequisite: SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0. *Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 363-0 Topics in US Latina/o Literary and Cultural Studies (1 Unit)**

Analysis of diverse literary and/or cultural productions by and about US Latina/os. Topics may include the politics of representation, cultural and social identity, race, ethnicity and gender, transnationalism and globalization. Case studies vary across cultural practices, media, and literary texts.

Prerequisite: 1 course from SPANISH 220-0, SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Social Behavioral Sciences Distro Area*

**SPANISH 364-0 Cultural Borders/Border Cultures (1-2 Units)**

Examining diverse (literary, artistic, and cinematic) representations of border spaces and subjectivities in Latin America (the US-Mexico border; the Caribbean as a border space) in order to study the processes of contact, hybridization, adaptation, and exclusion that are generated, and the modes of self-fashioning that are produced, from within this cultural dislocation. Prerequisite: 1 course from SPANISH 220-0, SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0. *Literature Fine Arts Distro Area*

**SPANISH 380-0 Topics in Film in Latin America and/or Spain (1 Unit)**

Introduction to film in Latin America and/or Spain during the 20th century. Topics vary and may include a historical survey of film, a study of films of a specific period, a comparative analysis of literary works and cinematic adaptations, or the work of specific filmmakers. May be repeated for credit with different topic.

Prerequisite: 1 course from SPANISH 220-0, SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area*

**SPANISH 380-SA Topics in Film in Latin America and/or Spain (1 Unit)**

Introduction to film in Latin America and/or Spain during the 20th century. Topics vary and may include a historical survey of film, a study of films of a specific period, a comparative analysis of literary works and cinematic adaptations, or the work of specific filmmakers. May be repeated for credit with different topic. Prerequisite: 1 course from SPANISH 220-0, SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0. *Literature Fine Arts Distro Area*

**SPANISH 395-0 Topics in Latin American, Latina and Latino, and/or Iberian Cultures (1 Unit)**

Advanced study of topics in the literary traditions of either Latin America or Spain. Possible topics include intellectual history, transatlantic exchanges, literature of the fantastic, feminist traditions, hybrid cultures, and history and fiction. May be repeated for credit with different topic. Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 395-SA Topics in Latin American, Latina and Latino, and/or Iberian Cultures (1 Unit)** Advanced study of topics in the literary traditions of either Latin America or Spain. Possible topics include intellectual history, transatlantic exchanges, literature of the fantastic, feminist traditions, hybrid cultures, and history and fiction. May be repeated for credit with different topic. Prerequisite: 1 course from SPANISH 250-0, SPANISH 251-0, SPANISH 260-0, or SPANISH 261-0.

*Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**SPANISH 397-0 Topics in Latin American, Latina & Latino, and Iberian Literatures and Cultures (Taught in English) (1 Unit)**

Aspects of the literatures and cultures of Latin America and Spain. Possible topics include postcolonial criticism and its reception in Hispanic cultures, notions of translation, theories of poetics, orality and oral culture, the memoir, and travel writing. May be repeated for credit with different topic.

*Literature Fine Arts Distro Area*

**SPANISH 399-0 Independent Study (1 Unit)** Independent reading under supervision. Consultation with director of undergraduate studies required.

## Portuguese Courses

**PORT 101-1 Elementary Portuguese (1 Unit)** Introduction to grammar and development of listening, speaking, reading, and writing skills in Brazilian Portuguese, as well as the history and culture of Portuguese-speaking countries.

**PORT 101-2 Elementary Portuguese (1 Unit)** Introduction to grammar and development of listening, speaking, reading, and writing skills in Brazilian Portuguese, as well as the history and culture of Portuguese-speaking countries. Prerequisite: PORT 101-1 or sufficient score on placement test.

**PORT 101-3 Elementary Portuguese (1 Unit)** Introduction to grammar and development of listening, speaking, reading, and writing skills in Brazilian Portuguese, as well as the history and culture of Portuguese-speaking countries. Prerequisite: PORT 101-2 or sufficient score on placement examination.

**PORT 105-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PORT 105-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**PORT 115-1 Portuguese for Speakers of Spanish and other Romance Languages (1 Unit)** For students proficient in Spanish, French or Italian. Comparative sociolinguistic and interactive approach to communicative competence emphasizing pronunciation, intonation, sentence structure, and patterns of spoken and written Portuguese. Prerequisite: AP 4 in Spanish, French or Italian; or equivalent on the Language Placement Exam.

**PORT 115-2 Portuguese for Speakers of Spanish and other Romance Languages (1 Unit)** For students proficient in Spanish, French or Italian. Comparative sociolinguistic and interactive approach to communicative competence emphasizing pronunciation, intonation, sentence structure, and patterns of spoken and written Portuguese.

Prerequisite: PORT 115-1. This course is equivalent to PORT 121-3.

**PORT 121-1 Intermediate Portuguese (1 Unit)** Port 121 helps students achieve an intermediate level of proficiency through further development of listening, speaking, reading and writing skills. Grammar, vocabulary and pronunciation of Brazilian Portuguese will continue to be developed through meaningful cultural contexts. The course also offers insights into the history and culture of the Portuguese speaking countries in Europe, Africa and America. Prerequisite: PORT 101-3 or placement test.

**PORT 121-2 Intermediate Portuguese (1 Unit)** Port 121 helps students achieve an intermediate level of proficiency through further development of listening, speaking, reading and writing skills. Grammar, vocabulary and pronunciation of Brazilian Portuguese will continue to be developed through meaningful cultural contexts. The course also offers insights into the history and culture of the Portuguese speaking countries in Europe, Africa and America. Prerequisite: PORT 121-1 or sufficient score on the Portuguese Language Placement Exam.

**PORT 121-3 Intermediate Portuguese (1 Unit)** Port 121 helps students achieve an intermediate level of proficiency through further development of listening, speaking, reading and writing skills. Grammar, vocabulary and pronunciation of Brazilian Portuguese will continue to be developed through meaningful cultural contexts. The course also offers insights into the history and culture of the Portuguese speaking countries in Europe, Africa and America. Prerequisite: PORT 121-2 or Placement.

**PORT 201-0 Reading and Speaking Portuguese (1 Unit)** This intermediate course is designed to expand mastery in reading and speaking Brazilian Portuguese through select cultural videos, readings of literary cronicas, periodicals, and the Internet. Prerequisite: PORT 115-2, PORT 121-3, or sufficient score on placement examination.

**PORT 202-0 Reading and Writing Portuguese (1 Unit)** Instruction in reading and writing expository and narrative prose. Emphasis on vocabulary, linguistic skills, and syntax appropriate to formal written Portuguese. Prerequisite: PORT 115-2, PORT 121-3, or sufficient score on placement examination.

**PORT 210-0 Icons, Legends, and Myths in Brazil (1 Unit)**

Representations in graphic materials, documentaries, film, theater, folklore, narrative fiction, and popular music of historical, literary, and popular figures in the national imagination. May include English or Portuguese discussion sections. Prerequisite for Portuguese section: PORT 201-0, PORT 202-0, or sufficient score on placement exam. Prerequisite for English section: none. *Historical Studies Distro Area Interdisciplinary Distro - See Rules (p. 216) Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PORT 303-0 Topics in Advanced Portuguese (1 Unit)** Advanced review of grammar concepts and idiomatic use of spoken and written Portuguese. Deals with a variety of topics in the context of Brazilian and Lusophone culture, history, literature, and current events. May be taken more than once for credit with change of topic. Prerequisite: PORT 202-0 or equivalent.

**PORT 380-0 Contemporary Brazil: Literature and Film (1 Unit)**

Study of the literature and film produced in Brazil during the 21st century. Focus on narrative forms, genres, and sociocultural issues.

*Global Perspectives on Power, Justice, and Equity Literature Fine Arts Distro Area Literature and Arts Foundational Discipline*

**PORT 396-0 Topics in Lusophone Cultures (1 Unit)**

Aspects of the literatures and cultures of Brazil, Portugal, and Lusophone Africa (Mozambique, Angola, Cape Verde, São Tomé and Príncipe, Guiné-Bissau). Possible topics include Brazilian modernism, Lusophone African literature and film, race and sexuality in Brazilian literature, travel narrative, literature and ethnography, the Portuguese novel, nation and nationalism. May be repeated for credit with different topic.

*Literature Fine Arts Distro Area*

**PORT 399-0 Independent Study (1 Unit)** Independent study under supervision. Consultation with the director of undergraduate studies required.

## Spanish Major

The major in Spanish is designed to immerse students in the complexity and diversity of literary and intellectual traditions in Latin American and Iberian cultures while they achieve language fluency. Students are encouraged to focus on particular interests, such as literary and cultural history, Latina and Latino studies, Lusophone studies, race and ethnicity, film, and cultural history. Many students fulfill some of the major requirements through courses taken in study abroad programs.

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

Course	Title
<b>Prerequisite</b>	
SPANISH 121-3 or SPANISH 125-0 or SPANISH 127-0	Intermediate Spanish Accelerated Intermediate Spanish Accelerated Intermediate Spanish for Heritage Language Learners
or score of 4 on AP Spanish Language and Culture or AP Spanish Literature and Culture. AP score of 5 fulfills prerequisite and additionally places students ahead in major courses. <sup>1</sup>	
or placement by the online Spanish Language Placement Exam ( <a href="http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html">www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html</a> ( <a href="http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html">http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html</a> ))	
<b>Major in Spanish Requirements (15 units)</b>	
<b>2 courses (unless placed out):<sup>1</sup></b>	
SPANISH 201-0 & SPANISH 204-0 or SPANISH 200-0	Advanced Spanish I: Contemporary Latin America and Advanced Spanish II: Artivism in Times of Political Change Advanced Spanish for Heritage Language Learners
<b>3 literature courses at the 200-level chosen from:</b>	
SPANISH 250-0 SPANISH 251-0 SPANISH 260-0 SPANISH 261-0	Literature in Spain before 1700 Literature in Spain since 1700 Literature in Latin America before 1888 Literature in Latin America since 1888
<b>7 300-level courses in the department chosen from:<sup>2</sup></b>	
SPANISH 301-0 or SPANISH 302-0 SPANISH 323-0 SPANISH 333-0 SPANISH 335-0	Topics in Language Advanced Grammar Cervantes' Don Quixote The Spanish Civil War: The Good Fight Modern Fiction in Spain: Studies in Genre

SPANISH 340-0	Colonial Latin American Literature
SPANISH 341-0	Latin American Modernismo
SPANISH 342-0	Race and Representation in Latin America
SPANISH 343-0	Latin American Avant-Gardes
SPANISH 344-0	Borges
SPANISH 345-0	Reading the 'Boom'
SPANISH 346-0	Testimonial Narrative in Latin America
SPANISH 347-0	Literature and Revolution in Latin America
SPANISH 348-0	Readings in Latin American Short Fiction
SPANISH 350-0	Visual Culture in Latina/o America and Spain
SPANISH 360-0	Spain: Studies in Culture and Society
SPANISH 361-0	Latin America: Studies in Culture and Society
SPANISH 362-0	Citizenship and Urban Violence in Latin America
SPANISH 363-0	Topics in US Latina/o Literary and Cultural Studies
SPANISH 364-0	Cultural Borders/Border Cultures
SPANISH 380-0	Topics in Film in Latin America and/or Spain
SPANISH 395-0	Topics in Latin American, Latina and Latino, and/or Iberian Cultures

*3 elective courses at the 200 or 300 level*

Electives at the 200 or 300 level related to the Latin American, Iberian, or US Latino/a historical, literary, and/or cultural traditions taken in the department (no more than 1 with readings and discussion in English). Courses may be taken in another department or in study abroad programs with prior approval of an undergraduate adviser.

<sup>1</sup> Students who take SPANISH 200-0 only, or skip one or both of SPANISH 201-0 & SPANISH 204-0 based on a score of 5 on AP Spanish exam(s), may take additional 200-level or 300-level department courses as approved by the department adviser to complete a total of 15 units for the major. For details about Advanced Placement see AP Exam Info (<https://spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/ap-exam-info.html>) on the Department of Spanish and Portuguese webpage.

<sup>2</sup> The 7 300-level courses must include:

- At least 1 that deals with a period before 1800
- At least 1 that deals with the literature and/or culture of Latin America
- At least 1 that deals with the literature and/or culture of Spain

## Honors in Spanish

Majors with strong academic records and an interest in pursuing honors should apply for the honors program during the quarter before independent study for honors is to begin. Students approved by the department enroll in 2 quarters of SPANISH 399-0 during either fall-winter or winter-spring of senior year and complete a senior thesis; the 2 quarters of SPANISH 399-0 count toward the 15 units required for the major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information see the department website (<https://spanish-portuguese.northwestern.edu/undergraduate/honors-awards/spanish-honors-program1.html>), contact a faculty adviser, and see Honors in the Major (p. 222).

## Spanish Minor

The minor is designed primarily to enable students to achieve cultural, literary, and linguistic competence in Spanish by exploring the literatures

and cultures of Latin America and Spain. Many students fulfill some of the minor requirements through courses taken in study abroad programs.

Course	Title
Prerequisite	
SPANISH 121-3 or SPANISH 125-0 or SPANISH 127-0	Intermediate Spanish Accelerated Intermediate Spanish Accelerated Intermediate Spanish for Heritage Language Learners
or score of 4 on AP Spanish Language and Culture or AP Spanish Literature and Culture. AP score of 5 satisfies prerequisite and additionally qualifies students to start with more advanced courses; see department website for details.	
or placement by the online Spanish Language Placement Exam ( <a href="http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html">www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html</a> ( <a href="http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html">http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/online-placement-test.html</a> ))	
<b>Minor in Spanish Requirements (8 units)<sup>1</sup></b>	
<i>Up to five courses at the 200 level listed here; must include at least two literature survey courses:<sup>2,3</sup></i>	
SPANISH 201-0 & SPANISH 204-0  or SPANISH 200-0	Advanced Spanish I: Contemporary Latin America and Advanced Spanish II: Activism in Times of Political Change  Advanced Spanish for Heritage Language Learners
SPANISH 205-0  or SPANISH 206-0	Spanish for Professions: Health Care  Spanish for Professions: Business
SPANISH 208-0	Spanish and the Community
SPANISH 210-0	Icons, Legends, & Myths in Latin American, Latino and/or Iberian Cultures
SPANISH 280-0	Introduction to Spanish Linguistics
SPANISH 281-0	Spanish Phonetics and Phonology
Literature survey courses (students choose at least 2):	
SPANISH 250-0 SPANISH 251-0 SPANISH 260-0 SPANISH 261-0	Literature in Spain before 1700 Literature in Spain since 1700 Literature in Latin America before 1888 Literature in Latin America since 1888
<i>At least 3 courses at the 300 level chosen from:</i>	
SPANISH 301-0 or SPANISH 302-0 SPANISH 323-0 SPANISH 333-0 SPANISH 335-0 SPANISH 340-0 SPANISH 341-0 SPANISH 342-0 SPANISH 343-0 SPANISH 344-0 SPANISH 345-0 SPANISH 346-0 SPANISH 347-0 SPANISH 348-0 SPANISH 350-0 SPANISH 360-0 SPANISH 361-0 SPANISH 362-0 SPANISH 363-0 SPANISH 364-0 SPANISH 380-0	Topics in Language Advanced Grammar Cervantes' Don Quixote The Spanish Civil War: The Good Fight Modern Fiction in Spain: Studies in Genre Colonial Latin American Literature Latin American Modernismo Race and Representation in Latin America Latin American Avant-Gardes Borges Reading the 'Boom' Testimonial Narrative in Latin America Literature and Revolution in Latin America Readings in Latin American Short Fiction Visual Culture in Latina/o America and Spain Spain: Studies in Culture and Society Latin America: Studies in Culture and Society Citizenship and Urban Violence in Latin America Topics in US Latina/o Literary and Cultural Studies Cultural Borders/Border Cultures Topics in Film in Latin America and/or Spain

SPANISH 395-0	Topics in Latin American, Latina and Latino, and/or Iberian Cultures
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- 1 One 200- or 300-level department course on Latin American or Spanish literature or culture with readings and discussion in English may be used in place of one of the 8 required courses for the minor.
- 2 Some students take SPANISH 200-0 only, or skip one or both of SPANISH 201-0 & SPANISH 204-0 based on a score of 5 on AP Spanish exam(s). Those students just take additional department courses as approved by the department adviser to complete a total of 8 units for the minor. For details about Advanced Placement see AP Exam Info (<https://spanish-portuguese.northwestern.edu/undergraduate/language-placement/spanish/ap-exam-info.html>) on the Department of Spanish and Portuguese webpage.
- 3 SPANISH 202-SA (and SPANISH 215-SA) can be counted towards the minor in Spanish.

## Portuguese Language and Lusophone Cultures Minor

The minor in Portuguese enables students to acquire competence in oral and written Portuguese and to explore the literatures and cultures of Brazil, Lusophone Africa, and/or Portugal.

The minor draws from faculty and courses in departments and programs such as Spanish, History, and African American studies. Students are encouraged to study abroad in the target cultures and may count up to 3 study abroad courses toward the minor.

Students who meet the prerequisite requirements and wish to declare a minor should meet with a department adviser.

Course	Title
Prerequisite	
PORT 115-2 or PORT 121-3	Portuguese for Speakers of Spanish and other Romance Languages Intermediate Portuguese
or placement at the 200 level on the Portuguese Language Placement Exam ( <a href="http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/portuguese.html">www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/portuguese.html</a> ( <a href="http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/portuguese.html">http://www.spanish-portuguese.northwestern.edu/undergraduate/language-placement/portuguese.html</a> ))	
<b>Minor Requirements (6 units, at least 3 must be at the 300-level)</b>	
2 courses:	
PORT 201-0 PORT 202-0	Reading and Speaking Portuguese Reading and Writing Portuguese
2 of the following courses, one or both at the 300 level:	
PORT 210-0 PORT 303-0 PORT 380-0 PORT 396-0	Icons, Legends, and Myths in Brazil Topics in Advanced Portuguese Contemporary Brazil: Literature and Film Topics in Lusophone Cultures
2 electives, at least 1 at the 300 level. Choose from:	
Additional courses in the Portuguese program (PORT)	
Courses in Spanish with a significant Brazilian or Portuguese component, provided that the final paper for the course focuses entirely or primarily on a Brazilian or Portuguese topic	
Courses in other departments or programs (e.g., History, Latin American & Caribbean Studies, Comparative Literary Studies) with a significant Brazilian, Portuguese, or Lusophone African component.	

# Statistics and Data Science

[statistics.northwestern.edu](http://statistics.northwestern.edu)

Statistics and Data Science are closely related scientific disciplines that deal with the collection, organization, analysis, interpretation, and reporting of data. As data becomes more abundant and readily accessible, the need for methods and techniques for extracting information from data has greatly increased. The wide range of applications of Statistics and Data Science methods include finance, engineering, medicine, sports, law, and biological, social, and physical sciences. Indeed, it is hard to think of any discipline nowadays that does not call upon the use of statistical methods and approaches.

Statistical methods are widely used in observational studies and for the design and analysis of experiments, sample surveys, and censuses. Such analysis involves diverse fields as clinical trials, political polling, actuarial science, and the design of financial instruments.

Data Science methods are widely used in settings with large amounts of data with a focus on computer analysis, efficiency in terms of both compute time and memory demands, and prediction in aid of decision-making. Entire new fields based on these methods have sprung up such as deep learning, artificial intelligence, and bioinformatics.

## Programs of Study

- Data Science Major (p. 443)
- Data Science Minor (p. 448)
- Statistics Major (p. 440)
- Statistics Minor (p. 442)

**STAT 101-7 College Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and introducing skills necessary to thriving at Northwestern. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**STAT 101-8 First-Year Writing Seminar (1 Unit)** Small, writing and discussion-oriented course exploring a specific topic or theme, and focused on the fundamentals of effective, college-level written communication. Not eligible to be applied towards a WCAS major or minor except where specifically indicated.

**STAT 201-0 Introduction to Programming for Data Science (1 Unit)** This course is an introduction programming for Data Science. It will prepare students to use essential programming methods as implemented in either Python or R as a tool in the subsequent data science courses including STAT 301-1, STAT 302-0, STAT 303-1, STAT 304-0, STAT 305-0, STAT 350-0, etc. Prerequisite: High School Algebra. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**STAT 202-0 Introduction to Statistics and Data Science (1 Unit)** Data collection, summarization, correlation, regression, sampling, confidence intervals, tests of significance. Introduction to data analysis techniques using R programming, no prior programming experience required. May not receive credit for both STAT 202-0 and STAT 210-0. Prerequisite: makes minimal use of high school algebra (calculus is not required). *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**STAT 202-SG Peer-Guided Study Group: Introduction to Statistics and Data Science (0 Unit)** Peer-guided study group for students enrolled in STAT 202-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**STAT 210-0 Introduction to Probability and Statistics (1 Unit)** A mathematical introduction to probability theory and statistical methods, including properties of probability distributions, sampling distributions, estimation, confidence intervals, and hypothesis testing. STAT 210-0 is primarily intended for economics majors. May not receive credit for both STAT 202-0 and STAT 210-0. Prerequisite: strong background in high school algebra (calculus is not required). *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**STAT 210-SG Peer-Guided Study Group: Introduction to Probability and Statistics (0 Unit)** Peer-guided study group for students enrolled in STAT 210-0. Meets weekly in small groups, along with a peer facilitator, to collaboratively review material, work through practice problems, and clarify course concepts. Enrollment optional. Graded S/U.

**STAT 228-0 Series and Multiple Integrals (1 Unit)** Sequences and series, and convergence tests. Power series, Taylor polynomials and error. Double integrals, triple integrals, and change of variables. Students may receive credit for only one of MATH 235#0, MATH 226#0, or STAT 228#0. Prerequisite: MATH 218#3 or MATH 220#2, and MATH 228#1 or MATH 230#1 or MATH 281#1 or MATH 285#2 or MATH 290#2 or MATH 291#2 or ES\_APPM 252#1. *Empirical and Deductive Reasoning Foundational Dis Formal Studies Distro Area*

**STAT 232-0 Applied Statistics (1 Unit)** Basic concepts of using statistical models to draw conclusions from experimental and survey data. Topics include simple linear regression, multiple regression, analysis of variance, and analysis of covariance. Practical application of the methods and the interpretation of the results will be emphasized. Prerequisites: STAT 202-0, STAT 210-0, or equivalent; MATH 220-1. *Formal Studies Distro Area*

### STAT 301-1 Data Science 1 with R (1 Unit)

First course in Data Science with a focus on data management, manipulation, and visualization skills and techniques for exploratory data analysis. The course also introduces the R programming language. Students may not receive credit for both this course and STAT 303-1. Prerequisite: STAT 201-0 or COMP\_SCI 110-0 and STAT 202-0 or STAT 210-0 or STAT 232-0 or PSYCH 201-0 or IEMS 201-0 or IEMS 303-0 or equivalent. *Formal Studies Distro Area*

### STAT 301-2 Data Science 2 with R (1 Unit)

Introduction to supervised machine/statistical learning with a focus on application using R. Course covers essential concepts in machine learning while surveying standard machine learning models such as linear and logistic regression. Course provides a foundation for learning more machine learning methods. Students may not receive credit for both this course and STAT 303-2. Prerequisite: STAT 301-1. *Formal Studies Distro Area*

### STAT 301-3 Data Science 3 with R (1 Unit)

An intermediate course that covers machine learning methods in R, including supervised and unsupervised learning. It provides the knowledge and skills necessary to tackle real world problems with machine learning. Students may not receive credit for both this course and STAT 303-3. Prerequisite: STAT 301-2. *Formal Studies Distro Area*

### STAT 302-0 Data Visualization (1 Unit)

Introduction to the knowledge, skills, and tools required to visualize data of various formats across statistical domains and to create quality visualizations for both data exploration and presentation. Prerequisite: STAT 202-0 or equivalent.

*Formal Studies Distro Area***STAT 303-1 Data Science 1 with Python (1 Unit)**

First course in Data Science, with focus on data management, manipulation, and visualization skills and techniques for exploratory data analysis. The course also introduces the Python programming language in the context of Data Science. Students may not receive credit for both this course and STAT 301-1.

Prerequisite: STAT 201-0 or COMP\_SCI 110-0 and STAT 202-0 or STAT 210-0 or STAT 232-0 or PSYCH 201-0 or IEMS 201-0 or IEMS 303-0 or equivalent.

*Formal Studies Distro Area***STAT 303-2 Data Science 2 with Python (1 Unit)**

Introduction to supervised machine/statistical learning with a focus on application using Python. Course covers essential concepts in machine learning while surveying standard machine learning models such as linear and logistic regression. Course provides a foundation for learning more machine learning methods. Students may not receive credit for both this course and STAT 301-2.

Prerequisite: STAT 303-1.

*Formal Studies Distro Area***STAT 303-3 Data Science 3 with Python (1 Unit)**

An intermediate course that covers machine learning methods in Python, including supervised and unsupervised learning. It provides the knowledge and skills necessary to tackle real world problems with machine learning. Students may not receive credit for both this course and STAT 301-3.

Prerequisite: STAT 303-2.

*Formal Studies Distro Area***STAT 304-0 Data Structures and Algorithms for Data Science (1 Unit)**

This course will introduce students to the design, implementation, analysis, and proper application of abstract data types, data structures, and their algorithms. Python will be used to implement and explore various algorithms and data structures. Students should be prepared for a significant amount of hands-on programming.

Prerequisite: STAT 201-0 or COMP\_SCI 110-0 and STAT 202-0 or STAT 210-0 or STAT 232-0 or PSYCH 201-0 or IEMS 201-0 or IEMS 303-0 or equivalent.

*Formal Studies Distro Area***STAT 305-0 Information Management for Data Science (1 Unit)**

This course aims to give students an extensive data processing and visualization skillset using various Python libraries. It will also focus on relational databases and queries in SQL. Students will learn data scraping from online sources and mobile applications as well as a brief introduction to statistical and predictive analysis after the data is clean and ready to use.

Prerequisite: STAT 201-0 or COMP\_SCI 110-0 and STAT 202-0 or STAT 210-0 or STAT 232-0 or PSYCH 201-0 or IEMS 201-0 or IEMS 303-0 or equivalent.

*Formal Studies Distro Area***STAT 320-1 Statistical Theory & Methods 1 (1 Unit)**

Sample spaces, computing probabilities, random variables, distribution functions, expected values, variance, correlation, limit theory. May not receive credit for both STAT 320-1 and any of STAT 383-0, MATH 310-1, MATH 311-1, MATH 314-0, MATH 385-0, ELEC\_ENG 302-0, or IEMS 302-0. Co-requisites: STAT 202-0 or STAT 210-0 or STAT 232-0 or PSYCH 201-0 or IEMS 201-0 or IEMS 303-0 or equivalent, STAT 228-0 or MATH 235-0 or both MATH 226-0 and MATH 230-2 or MATH 228-2 or MATH 281-2 or MATH 285-3 or MATH 290-3 or MATH 291-3 or ES\_APPM 252-2.

*Formal Studies Distro Area***STAT 320-2 Statistical Theory & Methods 2 (1 Unit)**

Parameter estimation, confidence intervals, hypothesis tests.

Prerequisite: STAT 320-1 or MATH 310-1 or MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or ELEC\_ENG 302-0 or IEMS 302-0 or STAT 383-0.

*Formal Studies Distro Area***STAT 320-3 Statistical Theory & Methods 3 (1 Unit)**

Comparison of parameters, goodness-of-fit tests, regression analysis, analysis of variance, and nonparametric methods.

Prerequisites: STAT 320-2 and MATH 240-0 or MATH 285-1 or MATH 281-3 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1.

*Formal Studies Distro Area***STAT 325-0 Survey Sampling (1 Unit)**

Probability sampling, simple random sampling, error estimation, sample size, stratification, systematic sampling, replication methods, ratio and regression estimation, cluster sampling.

Prerequisites: MATH 230-1 and 2 quarters of statistics, or consent of instructor.

*Formal Studies Distro Area***STAT 328-0 Causal Inference (1 Unit)**

Introduction to modern statistical thinking about causal inference. Topics include completely randomized experiments, confounding, ignorability of assignment mechanisms, matching, observational studies, noncompliance, and Bayesian methods.

Prerequisites: STAT 320-2, STAT 350-0.

*Formal Studies Distro Area***STAT 330-1 Applied Statistics for Research 1 (1 Unit)**

First Quarter: Design of experiments and surveys, numerical summaries of data, graphical summaries of data, correlation and regression, probability, sample mean, sample proportion, confidence intervals and tests of significance, one and two sample problems, ANOVA. Second Quarter: Simple linear regression, inference, diagnostics, multiple regression diagnostics, autocorrelation, 1-way ANOVA, power and sample size determination, 2-way ANOVA, ANCOVA, randomized block designs.

**STAT 332-0 Statistics for Life Sciences (1 Unit)** Application of statistical methods and data analysis techniques to the life sciences. Parametric statistics, nonparametric approaches, resampling-based approaches.

Prerequisite: 1 introductory statistics course. *Formal Studies Distro Area*

**STAT 344-0 Statistical Computing (1 Unit)**

Exploration of theory and practice of computational statistics with emphasis on statistical programming in R.

Prerequisite: STAT 320-2 or equivalent. Some R programming experience is desired.

*Formal Studies Distro Area***STAT 348-0 Applied Multivariate Analysis (1 Unit)**

Statistical methods for describing and analyzing multivariate data. Principal component analysis, factor analysis, canonical correlation, clustering. Emphasis on statistical and geometric motivation, practical application, and interpretation of results.

Prerequisites: STAT 320-2 and STAT 350-0 and MATH 240-0 or MATH 285-1 or MATH 281-3 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1. The course uses R extensively; hence, some experience with R will be useful.

*Formal Studies Distro Area***STAT 350-0 Regression Analysis (1 Unit)**

Simple linear regression and correlation, multiple regression, residual analysis, model building, variable selection, multi-collinearity and shrinkage estimation, nonlinear regression.

Prerequisites: STAT 201-0 or COMP\_SCI 110-0 and STAT 202-0 or STAT 210-0 or STAT 232-0 or PSYCH 201-0 or IEMS 201-0 or IEMS 303-0. Co-requisite: STAT 320-1 or STAT 383-0 or MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or ELEC\_ENG 302-0 or IEMS 302-0.

*Formal Studies Distro Area*

#### **STAT 351-0 Design and Analysis of Experiments (1 Unit)**

Methods of designing experiments and analyzing data obtained from them: one-way and two-way layouts, incomplete block designs, factorial designs, random effects, split-plot and nested designs.

Prerequisite: STAT 320-1 or STAT 383-0 or MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or ELEC\_ENG 302-0 or IEMS 302-0 or equivalent.

*Formal Studies Distro Area*

#### **STAT 352-0 Nonparametric Statistical Methods (1 Unit)**

Survey of nonparametric methods, with emphasis on understanding their application. Estimation of a distribution function, density estimation, and nonparametric regression.

Prerequisite: STAT 350-0.

*Formal Studies Distro Area*

#### **STAT 353-0 Advanced Regression (1 Unit)**

This course covers modern regression methods, including: (1) generalized linear models (binary, categorical, and count data), (2) random effects, mixed effects, and nonlinear models, and (3) model selection. The course emphasizes both the theoretical development of the methods, as well as their application, including the communication of models and results both verbally and in writing.

Prerequisites: STAT 350-0 and STAT 320-2 or STAT 420-2 or MATH 310-2.

*Formal Studies Distro Area*

#### **STAT 354-0 Time Series Modeling (1 Unit)**

Introduction to modern time series analysis. Autocorrelation, time series regression and forecasting, ARIMA and GARCH models.

Prerequisites: STAT 320-1 or STAT 383-0 or MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or ELEC\_ENG 302-0 or IEMS 302-0.

Corequisite: STAT 350-0.

*Formal Studies Distro Area*

#### **STAT 355-0 Analysis of Qualitative Data (1 Unit)**

Introduction to the analysis of qualitative data. Measures of association, loglinear models, logits, and probits.

Prerequisite: STAT 320-2 or equivalent.

*Formal Studies Distro Area*

#### **STAT 356-0 Hierarchical Linear Models (1 Unit)**

Introduction to the theory and application of hierarchical linear models. Two and three level linear models, hierarchical generalized linear models, and application of hierarchical models to organizational research and growth models.

Prerequisites: STAT 320-2 and STAT 350-0.

*Formal Studies Distro Area*

#### **STAT 357-0 Introduction to Bayesian Statistics (1 Unit)**

Introduction to basic concepts and principles in Bayesian inference such as the prior, likelihood, posterior and predictive distributions, as well as an introduction to a variety of computational algorithms for Bayesian inference. Students learn how to develop, describe, implement and critique statistical models from a Bayesian perspective.

Prerequisites: STAT 320-2 and STAT 301-2 or STAT 350-0 or consent of instructor.

*Formal Studies Distro Area*

#### **STAT 359-0 Topics in Statistics (1 Unit)**

Topics in theoretical and applied statistics to be chosen by instructor. Prerequisite: varies by course topic.

#### *Formal Studies Distro Area*

#### **STAT 360-0 Introduction to Generative AI (1 Unit)**

This course will provide an introduction to generative AI. In particular, we will cover large language models and diffusion models. By the end of the course, students should have a thorough understanding of all major components underpinning modern large language models. Students should be able to train their own large language models after taking this class.

Prerequisites: Linear algebra (MATH 240-0), STAT 320-2 or equivalent, some familiarity with deep learning, Python experience.

#### **STAT 362-0 Advanced Machine Learning for Data Science (1 Unit)**

This course aims to focus on the theory and applications of advanced Machine Learning (ML) and Deep Learning (DL) topics. It also includes an introduction to Bayesian Modeling and Reinforcement Learning (RL). The students are expected to have a basic understanding of ML from STAT 301-1-2-3/303-1-2-3. The coding language for the homework projects is Python. Prerequisites: STAT 301-3 or STAT 303-3. *Formal Studies Distro Area*

#### **STAT 365-0 Introduction to the Analysis of Financial Data (1 Unit)**

Statistical methods for analyzing financial data. Models for asset returns, portfolio theory, parameter estimation. The statistical software R is used.

Prerequisites: STAT 320-3 and MATH 240-0 or MATH 285-1 or MATH 281-3 or MATH 290-1 or MATH 291-1 or GEN\_ENG 205-1 or GEN\_ENG 206-1.

*Formal Studies Distro Area*

#### **STAT 370-0 Human Rights Statistics (1 Unit)**

Development, analysis, interpretation, use, and misuse of statistical data and methods for description, evaluation, and political action regarding war, disappearances, justice, violence against women, trafficking, profiling, elections, hunger, refugees, discrimination, etc.

Prerequisites: Two of STAT 325-0, STAT 350-0, STAT 320-2, STAT 320-3; or ECON 381-1, ECON 381-2; or MATH 386-1, MATH 386-2; or IEMS 303-0, IEMS 304-0.

*Formal Studies Distro Area*

#### **STAT 383-0 Probability and Statistics for ISP (1 Unit)**

Probability and statistics. Ordinarily taken only by students in ISP; permission required otherwise. May not receive credit for both STAT 383-0 and any of STAT 320-1, MATH 310-1, MATH 311-1, MATH 314-0, MATH 385-0, ELEC\_ENG 302-0, or IEMS 302-0. Prerequisites: MATH 281-1 and MATH 281-2 and MATH 281-3 and PHYSICS 125-1 and PHYSICS 125-2 and PHYSICS 125-3. *Formal Studies Distro Area*

**STAT 390-0 Data Science Project (1 Unit)** An opportunity to develop and create solutions for stakeholders with data needs. Students will work in teams to appropriately scope and solve data problems. Students should expect to spend significant amounts of time coordinating and working with team mates outside of class. Prerequisites: STAT 301-3 or STAT 303-3.

#### **STAT 398-0 Undergraduate Seminar (1 Unit)**

**STAT 399-0 Independent Study (1-3 Units)** Independent work under the guidance of a faculty member. Consent of department required.

## **Statistics Major**

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE:** This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/>

archives/) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.

## Requirements for the Statistics Major

Department courses (p. 441) (10 units); includes 3 electives (p. 441)

Related Courses (p. 441) (may be double-counted with another major, or with a minor). **Related courses in mathematics MUST be taken EARLY in the program of study;** includes prerequisites for required department courses.

For details see course lists, below.

### Department Courses

Course	Title
<b>Department Courses (see course descriptions for prerequisites in mathematics)</b>	
<i>2 introductory courses:</i>	
STAT 201-0	Introduction to Programming for Data Science
or COMP_SCI 110-0	Introduction to Computer Programming
(students who do not take STAT 201-0 are responsible for independently learning content not covered in alternative course) <sup>1</sup>	
STAT 202-0	Introduction to Statistics and Data Science
or STAT 210-0	Introduction to Probability and Statistics
or STAT 232-0	Applied Statistics
<i>5 core courses:</i>	
STAT 320-1	Statistical Theory & Methods 1
or STAT 383-0	Probability and Statistics for ISP
or MATH 310-1	Probability and Stochastic Processes
or MATH 311-1	MENU: Probability and Stochastic Processes
or MATH 314-0	Probability and Statistics for Econometrics
or MATH 385-0	Probability and Statistics for MMSS
or ELEC_ENG 302-0	Probabilistic Systems
or IEMS 302-0	Probability
(students who do not take STAT 320-1 are responsible for independently learning content not covered in alternative course) <sup>1</sup>	
STAT 320-2	Statistical Theory & Methods 2
STAT 320-3	Statistical Theory & Methods 3
STAT 348-0	Applied Multivariate Analysis
or STAT 351-0	Design and Analysis of Experiments
or STAT 354-0	Time Series Modeling
STAT 350-0	Regression Analysis
or ECON 381-2	Econometrics
<i>3 additional 300-level approved elective courses (see list below)</i>	

<sup>1</sup> Lists of topics not covered in substitute courses can be found on the department website (<https://statistics.northwestern.edu/undergraduate/>).

### Electives

List of approved 300-level electives for the major (students choose 3). For updates please refer to department website list of Electives Approved for the Statistics Major ([https://statistics.northwestern.edu/undergraduate/stat\\_major/electives\\_for\\_stat\\_major.html](https://statistics.northwestern.edu/undergraduate/stat_major/electives_for_stat_major.html))

Course	Title
STAT 301-1	Data Science 1 with R <sup>1</sup>
STAT 301-2	Data Science 2 with R <sup>1</sup>
STAT 301-3	Data Science 3 with R <sup>1</sup>
STAT 303-1	Data Science 1 with Python <sup>1</sup>

STAT 303-2	Data Science 2 with Python <sup>1</sup>
STAT 303-3	Data Science 3 with Python <sup>1</sup>
STAT 302-0	Data Visualization
STAT 328-0	Causal Inference
STAT 344-0	Statistical Computing
STAT 348-0	Applied Multivariate Analysis <sup>2</sup>
STAT 351-0	Design and Analysis of Experiments <sup>2</sup>
STAT 354-0	Time Series Modeling <sup>2</sup>
STAT 352-0	Nonparametric Statistical Methods
STAT 353-0	Advanced Regression
STAT 356-0	Hierarchical Linear Models
STAT 357-0	Introduction to Bayesian Statistics
STAT 359-0	Topics in Statistics
STAT 365-0	Introduction to the Analysis of Financial Data
No more than one of the following:	
STAT 304-0	Data Structures and Algorithms for Data Science
STAT 305-0	Information Management for Data Science
STAT 362-0	Advanced Machine Learning for Data Science
STAT 390-0	Data Science Project
No more than one of the following courses from other departments may be substituted for a department elective:	
IEMS 315-0	Stochastic Models
IEMS 351-0	Optimization Methods in Data Science
IEMS 365-0	Analytics for Social Good
IEMS 373-0	Intro to Financial Engineering
MATH 310-2	Probability and Stochastic Processes

<sup>1</sup> Students may receive credit for only one Data Science sequence: either Data Science with R (301 sequence), or Data Science with Python (303 sequence).

<sup>2</sup> Eligible as an elective if not being applied as one of the 5 core courses.

### Related Course Requirement

In addition to the 10 department courses, students must complete related courses in mathematics; see list below. **Related courses in mathematics MUST be taken EARLY in the program of study;** these are prerequisite courses for required department courses.

### Related courses required for the major

Course	Title
<b>See course descriptions for prerequisite sequencing of mathematics related courses</b>	
MATH 220-1 & MATH 220-2	Single-Variable Differential Calculus and Single-Variable Integral Calculus
or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 230-1	Multivariable Differential Calculus
or MATH 228-1	Multivariable Differential Calculus for Engineering
or MATH 281-1	Accelerated Mathematics for ISP First Year
or MATH 285-2	Accelerated Mathematics for MMSS
or MATH 290-2	MENU: Linear Algebra and Multivariable Calculus
or MATH 291-2	MENU: Intensive Linear Algebra and Multivariable Calculus
or ES_APPM 252-1	Honors Calculus for Engineers
MATH 226-0 & MATH 230-2	Sequences and Series and Multivariable Integral Calculus
or STAT 228-0	Series and Multiple Integrals

or MATH 235-0	Series and Multiple Integrals
or MATH 226-0	Sequences and Series
& MATH 228-2	and Multivariable Integral Calculus for Engineering
or MATH 226-0	Sequences and Series
& MATH 281-2	and Accelerated Mathematics for ISP. First Year
or MATH 226-0	Sequences and Series
& MATH 285-3	and Accelerated Mathematics for MMSS
or MATH 226-0	Sequences and Series
& MATH 290-3	and MENU: Linear Algebra and Multivariable Calculus
or MATH 226-0	Sequences and Series
& MATH 291-3	and MENU: Intensive Linear Algebra and Multivariable Calculus
or MATH 226-0	Sequences and Series
& ES_APPM 252-2	and Honors Calculus for Engineers
MATH 240-0	Linear Algebra
or MATH 281-3	Accelerated Mathematics for ISP. First Year
or MATH 285-1	Accelerated Mathematics for MMSS
or MATH 290-1	MENU: Linear Algebra and Multivariable Calculus
or MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus
or GEN_ENG 205-1	Engineering Analysis I
or GEN_ENG 206-1	Honor Engineering Analysis

## The Statistics Major with Additional Majors or Minors

The major in Statistics fulfills the Weinberg College requirement of completion of a major, but it also can be completed alongside another major, or with a minor. The general Weinberg College policies apply to such combinations. Below is clarifying text about how this works with certain combinations, and where particular exceptions to general rules are approved.

### The Statistics Major for Students in the Integrated Science Program

Students complete all requirements for ISP major, and requirements for Statistics major are modified as follows:

- Introductory Statistics course requirement: STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is **waived**
- MATH 226-0 is **waived**
- STAT 383-0 Probability and Statistics for ISP counts in place of STAT 320-1
- ISP students required to take either STAT 348-0 or STAT 354-0 (STAT 351-0 eligible to be applied as an elective only)

All other statistics major course requirements remain the same.

### The Statistics Major for Students in the Mathematical Methods in the Social Sciences Program

Students complete all requirements for the MMSS adjunct major, and requirements for Statistics major are modified as follows:

- Introductory Statistics course requirement: STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is **waived**
- MATH 226-0 is **waived**
- MATH 385-0 Probability and Statistics for MMSS counts in place of STAT 320-1
- STAT 350-0 is replaced by a combination of MATH 386-1 Econometrics for MMSS and MATH 386-2 Econometrics for MMSS

- MMSS students required to take either STAT 348-0 or STAT 354-0 (STAT 351-0 eligible to be applied as an elective only)

All other statistics major course requirements remain the same.

For triple major limitations see MMSS Adjunct Major (p. 361)

## Statistics Major with a Data Science Major

see Data Science Major (p. 443)

## Statistics Major with a Data Science Minor

see Data Science Minor (p. 448)

## Honors in Statistics

Majors with strong academic records and an interest in pursuing honors should contact the Director of Undergraduate Studies no later than the start of senior year. Accepted students take 2 quarters of STAT 399-0 Independent Study, during which they develop and write a research paper; these enrollments do not count toward the major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the Director of Undergraduate studies and see Honors in the Major (p. 222).

## Statistics Minor

Students who complete the minor in statistics receive serious exposure to probability theory, statistical estimation theory, statistical analysis, and the design of statistical data collection.

### Prerequisites for the Minor

Students choosing to minor in statistics are required to complete prerequisite courses in mathematics. Some may be completed concurrently with the 7 courses for the minor.

Course	Title
<b>Prerequisite courses (units vary by sequence)</b>	
MATH 220-1 & MATH 220-2 or MATH 218-1 & MATH 218-2 & MATH 218-3	Single-Variable Differential Calculus and Single-Variable Integral Calculus  Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 230-1 or MATH 228-1 or MATH 281-1 or MATH 285-2 or MATH 290-2 or MATH 291-2 or ES_APPM 252-1	Multivariable Differential Calculus  Multivariable Differential Calculus for Engineering Accelerated Mathematics for ISP. First Year Accelerated Mathematics for MMSS MENU: Linear Algebra and Multivariable Calculus MENU: Intensive Linear Algebra and Multivariable Calculus  Honors Calculus for Engineers
MATH 226-0 & MATH 230-2 or STAT 228-0 or MATH 235-0 or MATH 226-0 & MATH 228-2 or MATH 226-0 & MATH 281-2 or MATH 226-0 & MATH 285-3	Sequences and Series and Multivariable Integral Calculus  Series and Multiple Integrals Series and Multiple Integrals  Sequences and Series and Multivariable Integral Calculus for Engineering Sequences and Series and Accelerated Mathematics for ISP. First Year Sequences and Series and Accelerated Mathematics for MMSS

or MATH 226-0 & MATH 290-3	Sequences and Series and MENU: Linear Algebra and Multivariable Calculus
or MATH 226-0 & MATH 291-3	Sequences and Series and MENU: Intensive Linear Algebra and Multivariable Calculus
or MATH 226-0 & ES_APPM 252-2	Sequences and Series and Honors Calculus for Engineers
MATH 240-0	Linear Algebra
or MATH 281-3	Accelerated Mathematics for ISP First Year
or MATH 285-1	Accelerated Mathematics for MMSS
or MATH 290-1	MENU: Linear Algebra and Multivariable Calculus
or MATH 291-1	MENU: Intensive Linear Algebra and Multivariable Calculus
or GEN_ENG 205-1	Engineering Analysis I
or GEN_ENG 206-1	Honor Engineering Analysis

## Courses for the minor

Course	Title
<b>Minor Requirements (7 units)</b>	
2 introductory courses:	
STAT 201-0	Introduction to Programming for Data Science
or COMP_SCI 110-0	Introduction to Computer Programming
(students who do not take STAT 201-0 are responsible for independently learning content not covered in alternative course) <sup>1</sup>	
STAT 202-0	Introduction to Statistics and Data Science
or STAT 210-0	Introduction to Probability and Statistics
or STAT 232-0	Applied Statistics
5 core courses:	
STAT 320-1	Statistical Theory & Methods 1
or STAT 383-0	Probability and Statistics for ISP
or MATH 310-1	Probability and Stochastic Processes
or MATH 311-1	MENU: Probability and Stochastic Processes
or MATH 314-0	Probability and Statistics for Econometrics
or MATH 385-0	Probability and Statistics for MMSS
or ELEC_ENG 302-0	Probabilistic Systems
or IEMS 302-0	Probability
(students who do not take STAT 320-1 are responsible for independently learning content not covered in alternative course) <sup>1</sup>	
STAT 320-2	Statistical Theory & Methods 2
STAT 320-3	Statistical Theory & Methods 3
STAT 348-0	Applied Multivariate Analysis
or STAT 351-0	Design and Analysis of Experiments
or STAT 354-0	Time Series Modeling
STAT 350-0	Regression Analysis
or ECON 381-2	Econometrics

<sup>1</sup> List of topics not covered in substitute courses can be found on the department website (<https://statistics.northwestern.edu/undergraduate/>).

## The Statistics Minor in Relation to Majors

The minor in Statistics can be completed along with any major. The general Weinberg College policies about major/minor pairings apply. Below is clarifying text about how this works with certain majors, and where particular exceptions to general rules are approved.

## The Statistics Minor for Students in the Integrated Science Program

Students complete all requirements for ISP major, and requirements for Statistics minor are modified as follows:

- Introductory Statistics course requirement: STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is **waived**
- MATH 226-0 is **waived**
- STAT 383-0 Probability and Statistics for ISP counts in place of STAT 320-1
- ISP students required to take either STAT 348-0 or STAT 354-0 (STAT 351-0 may not be applied to the minor)

All other statistics minor course requirements remain the same.

## The Statistics Minor for Students in the Mathematical Methods in the Social Sciences Program

Students complete all requirements for the MMSS adjunct major, and requirements for the Statistics minor are modified as follows:

- Introductory Statistics course requirement: STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is **waived**
- MATH 226-0 is **waived**
- MATH 385-0 Probability and Statistics for MMSS counts in place of STAT 320-1
- STAT 350-0 is replaced by a combination of MATH 386-1 Econometrics for MMSS and MATH 386-2 Econometrics for MMSS
- MMSS students required to take either STAT 348-0 or STAT 354-0 (STAT 351-0 may not be applied to the minor)

All other statistics minor course requirements remain the same.

## Statistics Minor and the Data Science Major

see Data Science Major (p. 443) catalog page

## Data Science Major

Students must also complete the Undergraduate Registration Requirement (p. 27) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Requirements for the Data Science Major

- Department Courses (p. 444) (11 units)
- Related Courses (may be double-counted with another major, or with a minor)
  - Related courses in mathematics (p. 444) (units vary). **MUST be taken EARLY in the program of study**; includes prerequisite courses for required department courses.
  - Related courses in technical and domain science electives (p. 444) (2 units)
  - Related ethics course (p. 446) (1 unit)

For details see course lists, below.

## Department Courses

Course	Title	
<b>Department Courses (see course descriptions for prerequisites in mathematics)</b>		
<i>4 foundational courses:</i>		
STAT 201-0 or COMP_SCI 110-0	Introduction to Programming for Data Science <sup>2</sup> Introduction to Computer Programming	
(students who do not take STAT 201-0 are responsible for independently learning content not covered in alternative course) <sup>1</sup>		
STAT 202-0 or STAT 210-0 or STAT 232-0	Introduction to Statistics and Data Science <sup>2</sup> Introduction to Probability and Statistics Applied Statistics	
or approved introductory statistics course from another department <sup>2</sup>		
STAT 320-1 or STAT 383-0 or MATH 310-1 or MATH 311-1 or MATH 314-0 or MATH 385-0 or ELEC_ENG 302-0 or IEMS 302-0	Statistical Theory & Methods 1 <sup>2</sup> Probability and Statistics for ISP Probability and Stochastic Processes MENU: Probability and Stochastic Processes Probability and Statistics for Econometrics Probability and Statistics for MMSS Probabilistic Systems Probability	
(students who do not take STAT 320-1 are responsible for independently learning content not covered in alternative course) <sup>1</sup>		
STAT 320-2	Statistical Theory & Methods 2	
<i>6 data science core courses:</i>		
STAT 301-1 & STAT 301-2 & STAT 301-3 or	Data Science 1 with R and Data Science 2 with R and Data Science 3 with R	
STAT 303-1 & STAT 303-2 & STAT 303-3	Data Science 1 with Python and Data Science 2 with Python and Data Science 3 with Python	
NOTE! Students may receive credit for only one Data Science sequence: either Data Science with R (301 sequence), or Data Science with Python (303 sequence)		
STAT 304-0 or COMP_SCI 214-0	Data Structures and Algorithms for Data Science <sup>2</sup> Data Structures & Algorithms	
STAT 305-0 or COMP_SCI 217-0	Information Management for Data Science <sup>2</sup> Data Management & Information Processing	
STAT 362-0	Advanced Machine Learning for Data Science	
<i>1 capstone experience course:</i>		
STAT 390-0	Data Science Project	

<sup>1</sup> Lists of topics not covered in substitute courses can be found on the department website (<https://statistics.northwestern.edu/undergraduate/>).

<sup>2</sup> No more than 3 substitutions for STAT courses permitted

## Related Course Requirement

Three types of related courses are required.

### Related Courses - mathematics

Mathematics courses (units depend on mathematics sequence taken).

**MUST be taken EARLY in the program of study;** includes prerequisite courses for required department courses.

Course	Title
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See course descriptions for prerequisite sequencing of mathematics related courses

MATH 220-1 or MATH 220-2 or MATH 218-1 or MATH 218-2 or MATH 218-3	Single-Variable Differential Calculus and Single-Variable Integral Calculus Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus and Single-Variable Calculus with Precalculus
MATH 230-1 or MATH 228-1 or MATH 281-1 or MATH 285-2 or MATH 290-2 or MATH 291-2 or ES_APPM 252-1	Multivariable Differential Calculus Multivariable Differential Calculus for Engineering Accelerated Mathematics for ISP First Year Accelerated Mathematics for MMSS MENU: Linear Algebra and Multivariable Calculus MENU: Intensive Linear Algebra and Multivariable Calculus Honors Calculus for Engineers
MATH 226-0 & MATH 230-2 or STAT 228-0 or MATH 235-0 or MATH 226-0 & MATH 228-2 or MATH 226-0 & MATH 281-2 or MATH 226-0 & MATH 285-3 or MATH 226-0 & MATH 290-3 or MATH 226-0 & MATH 291-3 or MATH 226-0 & ES_APPM 252-2	Sequences and Series and Multivariable Integral Calculus Series and Multiple Integrals Series and Multiple Integrals Sequences and Series and Multivariable Integral Calculus for Engineering Sequences and Series and Accelerated Mathematics for ISP First Year Sequences and Series and Accelerated Mathematics for MMSS Sequences and Series and MENU: Linear Algebra and Multivariable Calculus Sequences and Series and MENU: Intensive Linear Algebra and Multivariable Calculus Sequences and Series and Honors Calculus for Engineers
MATH 240-0 or MATH 281-3 or MATH 285-1 or MATH 290-1 or MATH 291-1 or GEN_ENG 205-1 or GEN_ENG 206-1	Linear Algebra Accelerated Mathematics for ISP First Year Accelerated Mathematics for MMSS MENU: Linear Algebra and Multivariable Calculus MENU: Intensive Linear Algebra and Multivariable Calculus Engineering Analysis I Honor Engineering Analysis

### Related Courses - technical and domain science electives (students choose 2 courses; may be from different subject areas)

For updates please refer to department website list of Technical and Domain Science Electives ([https://statistics.northwestern.edu/undergraduate/data\\_science\\_major/technical-and-domain-science-electives.html](https://statistics.northwestern.edu/undergraduate/data_science_major/technical-and-domain-science-electives.html)). Some courses may have prerequisites; check course descriptions for details.

### Anthropology

Course	Title
ANTHRO 322-0	Introduction to Archaeology Research Design & Methods
ANTHRO 324-0	Archaeological Survey Methods
ANTHRO 362-0	Advanced Methods in Quantitative Analysis
ANTHRO 389-0	Ethnographic Methods and Analysis

### Biological Sciences

Course	Title
BIOI_SCI 323-0	Bioinformatics: Sequence and Structure Analysis
BIOI_SCI 338-0	Modeling Biological Dynamics

BIOL SCI 341-0	Population Genetics	ECON 316-0	Advanced Topics in Macroeconomics	
BIOL SCI 378-0	Functional Genomics	ECON 325-0	Economic Growth & Development	
<b>Biomedical Engineering</b>				
Course	Title	ECON 326-0	The Economics of Developing Countries	
BMD_ENG 311-0	Computational Genomics	ECON 327-0	Economic Development in Africa	
BMD_ENG 312-0	Biomedical Applications in Machine Learning	ECON 336-0	Analytic Methods for Public Policy Analysis	
<b>Chemical Engineering</b>				
Course	Title	ECON 337-0	Economics of State and Local Governments	
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems	ECON 339-0	Labor Economics	
CHEM_ENG 367-0	Quantitative Methods in Life Cycle Analysis	ECON 340-0	Economics of the Family	
<b>Cognitive Science</b>				
Course	Title	ECON 341-0	Economics of Education	
COG SCI 345-0	Presenting Ideas & Data	ECON 342-0	Economics of Gender	
<b>Communication Studies</b>				
Course	Title	ECON 349-0	Industrial Economics	
COMM_ST 352-0	Social Network Analysis	ECON 350-0	Monopoly Competition & Public Policy	
COMM_ST 355-0	Audience Analysis	ECON 351-0	Law and Economics	
COMM_ST 358-0	Algorithms and Society	ECON 354-0	Issues in Urban and Regional Economics	
COMM_ST 371-0	Cultural Analytics	ECON 355-0	Transportation Economics and Public Policy	
<b>Computer Engineering</b>				
Course	Title	ECON 358-0	Economics of Art and Culture	
COMP_ENG 329-0	The Art of Multicore Concurrent Programming	ECON 359-0	Economics of Nonprofit Organizations	
COMP_ENG 358-0	Introduction to Parallel Computing	ECON 360-1	Foundations of Corporate Finance Theory	
COMP_ENG 365-0	Internet-of-things Sensors, Systems, And Applications	ECON 360-2	Investments	
COMP_ENG 368-0	Programming Massively Parallel Processors with CUDA	ECON 361-0	International Trade	
<b>Computer Science</b>				
Course	Title	ECON 362-0	International Finance	
COMP_SCI 325-0	Artificial Intelligence Programming	ECON 371-0	Economics of Energy	
COMP_SCI 331-0	Introduction to Computational Photography	ECON 372-0	Environmental Economics	
COMP_SCI 333-0	Interactive Information Visualization	ECON 373-0	Natural Resource Economics	
COMP_SCI 336-0	Design & Analysis of Algorithms	ECON 381-1	Econometrics	
COMP_SCI 337-0	Natural Language Processing: Classical Approaches	ECON 381-2	Econometrics	
COMP_SCI 339-0	Introduction to Database Systems	ECON 383-0	Applied Econometrics	
COMP_SCI 341-0	Social Networks Analysis			
COMP_SCI 348-0	Introduction to Artificial Intelligence	<b>Electrical Engineering</b>		
COMP_SCI 352-0	Machine Perception of Music & Audio	Course	Title	
<b>Earth and Planetary Science</b>				
Course	Title	ELEC_ENG 328-0	Information Theory & Learning	
EARTH 323-0	Seismology and Earth Structure	ELEC_ENG 331-0	Introduction to Computational Photography	
EARTH 327-0	Geophysical Time Series Analysis	ELEC_ENG 332-0	Introduction to Computer Vision	
EARTH 340-0	Physics of Weather & Climate	ELEC_ENG 335-0	Deep Learning Foundations from Scratch	
EARTH 343-0	Earth System Modeling	ELEC_ENG 373-0	Deep Reinforcement Learning	
EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences	ELEC_ENG 375-0	Machine Learning: Foundations, Applications, and Algorithms	
EARTH 360-0	Instrumentation and Field Methods	<b>Engineering Sciences and Applied Mathematics</b>		
EARTH 361-0	Scientific Programming in Python	Course	Title	
<b>Economics</b>				
Course	Title	ES_APPM 346-0	Modeling and Computation in Science & Engineering	
ECON 307-0	Economics of Medical Care	ES_APPM 370-1	Introduction to Computational Neuroscience	
ECON 308-0	Money and Banking	ES_APPM 375-1	Quantitative Biology I: Experiments, Data, Models, and Analysis	
EARTH 360-0	Instrumentation and Field Methods	ES_APPM 375-2	Quantitative Biology II: Experiments, Data, Models, and Analysis	
EARTH 361-0	Scientific Programming in Python	<b>Global Health</b>		
<b>Industrial Engineering and Management Sciences</b>				
Course	Title	Course	Title	
IEMS 308-0	Data Science and Analytics	GBL_HLTH 303-0	(Re)mixing Qualitative Methods	
IEMS 313-0	Foundations of Optimization	GBL_HLTH 320-0	Qualitative Research Methods in Global Health	
IEMS 315-0	Stochastic Models			
IEMS 317-0	Discrete Event Systems Simulation			
IEMS 340-0	Qualitative Methods in Engineering Systems			

IEMS 341-0	Social Networks Analysis	STAT 344-0	Statistical Computing
IEMS 351-0	Optimization Methods in Data Science	STAT 348-0	Applied Multivariate Analysis
<b>Integrated Marketing and Journalism</b>			
Course	Title	STAT 350-0	Regression Analysis
IMC 302-0	Research and Data Analytics	STAT 351-0	Design and Analysis of Experiments
IMC 307-0	Digital, Social and Mobile Marketing	STAT 352-0	Nonparametric Statistical Methods
JOUR 377-0	Introduction to Data Journalism	STAT 353-0	Advanced Regression
JOUR 342-2	Knight Lab: Artificial Intelligence in Media	STAT 354-0	Time Series Modeling
		STAT 356-0	Hierarchical Linear Models
		STAT 357-0	Introduction to Bayesian Statistics
		STAT 365-0	Introduction to the Analysis of Financial Data
<b>Linguistics</b>			
Course	Title	<b>Related Courses - ethics elective (students choose 1 course)</b>	
LING 334-0	Introduction to Computational Linguistics	For updates please refer to department website list of Ethics Electives ( <a href="https://statistics.northwestern.edu/undergraduate/data_science_major/ethics-elective.html">https://statistics.northwestern.edu/undergraduate/data_science_major/ethics-elective.html</a> ). Some courses may have prerequisites; check course descriptions for details.	
<b>Mathematics</b>			
Course	Title	<b>Black Studies</b>	
MATH 306-0	Combinatorics & Discrete Mathematics	Course	Title
MATH 308-0	Graph Theory	BLK_ST 215-0	Introduction to Black Social & Political Life
MATH 310-2	Probability and Stochastic Processes	BLK_ST 220-0	Civil Rights and Black Liberation
MATH 310-3	Probability and Stochastic Processes	<b>Entrepreneurship</b>	
MATH 311-2	MENU: Probability and Stochastic Processes	Course	Title
MATH 311-3	MENU: Probability and Stochastic Processes	ENTREP 360-0	Leadership, Ethics, and You
MATH 366-0	Mathematical Models in Finance	<b>Global Health</b>	
MATH 368-0	Introduction to Optimization	Course	Title
MATH 386-1	Econometrics for MMSS	GBL_HLTH 302-0	Global Bioethics
MATH 386-2	Econometrics for MMSS	GBL_HLTH 324-0	Volunteerism and the Ethics of Help
<b>Music Theory</b>			
Course	Title	<b>Humanities</b>	
MUS_THRY 348-0	Corpus Studies	Course	Title
<b>Political Science</b>			
Course	Title	HUM 325-5	Humanities in the Digital Age
POLI_SCI 310-0	Methods of Political Inference	<b>Integrated Marketing and Journalism</b>	
POLI_SCI 312-0	Statistical Research Methods	Course	Title
<b>Psychology</b>			
Course	Title	IMC 310-0	IMC Law, Ethics and Technology
PSYCH 345-0	Presenting Ideas & Data	IMC 311-0	Data Governance
PSYCH 369-0	Psychological Tests & Measures	JOUR 303-0	Framed: Media and the Marginalized
PSYCH 380-0	Advanced Statistics & Experimental Design	JOUR 370-0	Media Law & Ethics
PSYCH 387-0	Consumer Psychology and Marketing Research	<b>Latina and Latino Studies</b>	
<b>School of Education and Social Policy</b>			
Course	Title	Course	Title
SESP 272-0	Field Research Methods	LATINO 342-0	Latina and Latino Social Movements
SOC_POL 330-0	Economics of Social Policy	LATINO 392-0	Topics in Latina and Latino Social and Political Issues
SOC_POL 331-0	Economics of Inequality and Discrimination	<b>Performance Studies</b>	
SOC_POL 333-0	Economics of Health, Human Capital, and Happiness	Course	Title
<b>Sociology</b>			
Course	Title	PERF_ST 306-0	Performance and Race
SOCIOl 303-0	Analysis and Interpretation of Social Data	<b>Philosophy</b>	
SOCIOl 329-0	Field Research and Methods of Data Collection	Course	Title
<b>Statistics and Data Science</b>			
Course	Title	PHIL 220-0	Introduction to Critical Theory
STAT 302-0	Data Visualization	or COMP_LIT 207-0	Introduction to Critical Theory
STAT 320-3	Statistical Theory & Methods 3	PHIL 221-0	Gender, Politics, & Philosophy
STAT 328-0	Causal Inference	or GNDR_ST 233-0	Gender, Politics, and Philosophy
		PHIL 224-0	Philosophy, Race, and Racism
		PHIL 240-0	Freedom and Responsibility
		PHIL 262-0	Ethical Problems and Public Issues
		PHIL 268-0	Ethics and the Environment

PHIL 269-0	Bioethics
PHIL 273-2	The Brady Scholars Program: The Good Life
PHIL 273-3	The Brady Scholars Program: The Good Society
PHIL 363-0	Kant's Moral Theory
PHIL 364-0	Business and Professional Ethics

### Political Science

Course	Title
POLI_SCI 302-0	Subjects, Citizens, Revolutionaries: Early Modern Political Thought
POLI_SCI 303-0	Modernity and Its Discontents
POLI_SCI 304-0	Human Rights Between East and West
POLI_SCI 307-0	Deportation Law and Politics
POLI_SCI 309-0 or LEGAL_ST 309-0	Political Theories of the Rule of Law Political Theories of the Rule of Law
POLI_SCI 347-0	Ethics in International Relations
POLI_SCI 382-0	Religion, Law, & Politics: Politics of Religious Diversity

### Religious Studies

Course	Title
RELIGION 373-0	Religion and Bioethics

### Slavic Languages and Literatures

Course	Title
SLAVIC 222-0	Language, Politics, & Identity
or LING 222-0	Language, Politics, and Identity

  

Course	Title
SLAVIC 260-0	Economics and the Humanities: Understanding Choice

### Sociology

Course	Title
SOCIOL 220-0	Health, Biomedicine, Culture, and Society
or HUM 220-0	Health, Biomedicine, Culture, and Society

  

Course	Title
SOCIOL 321-0	Numbers, Identity & Modernity: How Calculation Shapes Who We Are & What We Know

## Data Science Major with Additional Majors or Minors

The major in Data Science fulfills the Weinberg College requirement of completion of a major, but it also can be completed alongside another major, or with a minor. The general Weinberg College policies apply to such combinations. Below is clarifying text about how this works with certain combinations, and where particular exceptions to general rules are approved.

### The Data Science Major for Students in the Integrated Science Program

Students complete all requirements for the ISP major, and the requirements for Data Science major are modified as follows:

- Introductory Statistics course requirement (STAT 202-0, STAT 210-0, STAT 232-0 or equivalent) is **waived**
- MATH 226-0 is **waived**
- STAT 383-0 Probability and Statistics for ISP counts in place of STAT 320-1
- The 2 related Technical and Domain electives are automatically fulfilled by MATH 381-0 Fourier Analysis and Boundary Value Problems for ISP and EARTH 350-0 Physics of the Earth for ISP

All other data science major course requirements remain the same.

### The Data Science Major for Students in the Mathematical Methods in the Social Sciences Program

Students majoring in both Data Science and the adjunct major Mathematical Methods in the Social Sciences (MMSS) need to complete all requirements for the MMSS major, and requirements for Data Science major are modified as follows (for triple major limitations see MMSS Adjunct Major (p. 361)):

- Introductory Statistics course requirement (STAT 202-0, STAT 210-0, STAT 232-0 or equivalent) is **waived**
- MATH 226-0 is **waived**
- MATH 385-0 Probability and Statistics for MMSS counts in place of STAT 320-1
- The 2 related Technical and Domain electives are automatically fulfilled by MATH 386-1 Econometrics for MMSS and MATH 386-2 Econometrics for MMSS

All other data science major course requirements remain the same.

### The Data Science Major for Students Majoring in Statistics

For students who complete all requirements for Statistics major, the requirements for the Data Science major are modified as follows:

- Introductory Programming course requirement (STAT 201-0 or COMP\_SCI 110-0 will be replaced with an additional 300-level STAT approved elective course. Statistics + Data Science majors take 3, 300-level STAT electives from the approved electives list for the Statistics major (see Statistics Major (p. 440)).
- Introductory Statistics course requirement (STAT 202-0, STAT 210-0, STAT 232-0, or equivalent) is **waived**
- The 2 related Technical and Domain electives are automatically fulfilled by STAT 320-3 Statistical Theory & Methods 3 and STAT 350-0 Regression Analysis
- STAT 320-1 and STAT 320-2 are replaced with 2 elective courses approved by the Director of Undergraduate Studies for Data Science. The 2 elective courses designated as the replacements may not be double counted with any other major/minor.

Note that there can be no double counting between the 300 level elective courses required for the Statistics major and the required Data Science major courses including the elective courses designated as the STAT 320-1 and STAT 320-2 replacements.

All other Data Science major course requirements remain the same.

### The Data Science Major for Students Minoring in Statistics

Students complete all requirements for Statistics minor and requirements for Data Science major are modified as follows:

- Introductory Programming course requirement (STAT 201-0 or COMP\_SCI 110-0) is replaced with a 300-level STAT elective course from the approved elective list for the Statistics major (see Statistics Major (p. 440)).
- Introductory Statistics course requirement (STAT 202-0, STAT 210-0, STAT 232-0, or equivalent) is **waived**

- The 2 related Technical and Domain electives are automatically fulfilled by STAT 320-3 Statistical Theory & Methods 3 and STAT 350-0 Regression Analysis
- STAT 320-1 and STAT 320-2 are replaced with 2 elective courses approved by the Director of Undergraduate Studies for Data Science. The 2 elective courses designated as the replacements may not be double counted with any other major/minor.

All other Data Science major course requirements remain the same.

## The Data Science Major for Students Completing the Weinberg College Major or Minor in Computer Science

For students who complete all requirements for the Weinberg Computer Science major or minor, the requirements for the Data Science major are modified as follows:

- STAT 304-0 will be replaced with 1 elective course approved by the Director of Undergraduate Studies for Data Science.

All other Data Science major course requirements remain the same.

## The Data Science Major for Students Majoring in IEMS or Computer Science (McCormick)

Students complete all requirements for their IEMS or Computer Science (McCormick) major. While none of the requirements for the Data Science major change it is important to note:

- Students are not permitted to use more than 3 courses from outside the Department of Statistics and Data Science to substitute for required Data Science major STAT courses. (see footnote 2)

## Honors in Data Science

Majors with strong academic records and an interest in pursuing honors should contact the Director of Undergraduate Studies for Data Science no later than the start of senior year. Accepted students take 2 quarters of STAT 399-0 Independent Study, during which they develop and write a research paper; these enrollments do not count toward the major.

Students whose theses and grades meet department criteria are recommended to the college for graduation with honors. For more information consult the Director of Undergraduate Studies for Data Science and see Honors in the Major (p. 222).

## Data Science Minor

Students minoring in data science receive exposure to computational and applied statistical techniques. This minor provides a strong foundation in applied data techniques and methods essential for quantitative research and analysis.

## Requirements for the Minor in Data Science

Students take 2 foundational courses, 4 core courses (the 3 Data Science sequence courses and Data Visualization (STAT 302-0)), and 1 approved elective (p. 448). For details see course lists, below.

### Course Title

#### Minor Requirements (7 units)

##### 2 foundational courses:

STAT 201-0 or COMP_SCI 110-0	Introduction to Programming for Data Science Introduction to Computer Programming
---------------------------------	--

(students who do not take STAT 201-0 are responsible for independently learning content not covered in alternative course)<sup>1</sup>

STAT 202-0 or STAT 210-0 or STAT 232-0	Introduction to Statistics and Data Science Introduction to Probability and Statistics Applied Statistics
--	---

or approved introductory statistics course from another department

##### 4 data science core courses:

STAT 301-1 & STAT 301-2 & STAT 301-3	Data Science 1 with R and Data Science 2 with R and Data Science 3 with R
--	---

or

STAT 303-1 & STAT 303-2 & STAT 303-3	Data Science 1 with Python and Data Science 2 with Python and Data Science 3 with Python
--	--

NOTE! Students may receive credit for only one Data Science sequence: either Data Science with R (301 sequence), or Data Science with Python (303 sequence)

STAT 302-0	Data Visualization
------------	--------------------

1 approved elective course (see lists below)

<sup>1</sup> Lists of topics not covered in substitute courses can be found on the department website (<https://statistics.northwestern.edu/undergraduate/>).

Courses used to fulfill the requirements for the minor in data science may not be used to fulfill the requirements for another major/minor except where permitted by Weinberg College double-counting rules (see FAQ (<https://weinberg.northwestern.edu/undergraduate/degree/post-spring-2023-degree/double-counting-faq.html>)). When necessary (for example when a student plans to complete a major in statistics and a minor in data science), students can consult the Director of Undergraduate Studies for Data Science in the Department of Statistics and Data Science (<https://www.statistics.northwestern.edu/>) about selection of replacement course(s) to satisfy the credit requirements of the data science minor.

## Approved Elective Courses for the Data Science Minor

Students choose 1 course from any of the fields below. For updates please refer to department website list of Data Science Minor Approved Electives ([https://statistics.northwestern.edu/undergraduate/data\\_science\\_minor/dsminor\\_approved\\_elective.html](https://statistics.northwestern.edu/undergraduate/data_science_minor/dsminor_approved_elective.html)). Some courses may have prerequisites; check course descriptions for details.

### Anthropology

Course	Title
ANTHRO 322-0	Introduction to Archaeology Research Design & Methods
ANTHRO 324-0	Archaeological Survey Methods
ANTHRO 362-0	Advanced Methods in Quantitative Analysis
ANTHRO 389-0	Ethnographic Methods and Analysis

### Biological Sciences

Course	Title
BIOLOGY SCI 323-0	Bioinformatics: Sequence and Structure Analysis
BIOLOGY SCI 338-0	Modeling Biological Dynamics
BIOLOGY SCI 341-0	Population Genetics
BIOLOGY SCI 354-0	Systems Biology
BIOLOGY SCI 378-0	Functional Genomics

**Biomedical Engineering**

Course	Title
BMD_ENG 311-0	Computational Genomics
BMD_ENG 312-0	Biomedical Applications in Machine Learning

**Chemical Engineering**

Course	Title
CHEM_ENG 379-0	Computational Biology: Analysis and Design of Living Systems
CHEM_ENG 367-0	Quantitative Methods in Life Cycle Analysis

**Cognitive Science**

Course	Title
COG SCI 345-0	Presenting Ideas & Data

**Communication Studies**

Course	Title
COMM_ST 352-0	Social Network Analysis
COMM_ST 355-0	Audience Analysis
COMM_ST 358-0	Algorithms and Society
COMM_ST 371-0	Cultural Analytics

**Computer Engineering**

Course	Title
COMP_ENG 329-0	The Art of Multicore Concurrent Programming
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 365-0	Internet-of-things Sensors, Systems, And Applications
COMP_ENG 368-0	Programming Massively Parallel Processors with CUDA

**Computer Science**

Course	Title
COMP_SCI 214-0	Data Structures & Algorithms
COMP_SCI 217-0	Data Management & Information Processing
COMP_SCI 323-0	Code Analysis and Transformation
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 341-0	Social Networks Analysis
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 345-0	Distributed Systems
COMP_SCI 347-0	Conversational AI
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 351-2	Intermediate Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 367-0	Wireless and Mobile Health: Passive Sensing Data Analytics

**Earth and Planetary Science**

Course	Title
EARTH 323-0	Seismology and Earth Structure
EARTH 327-0	Geophysical Time Series Analysis
EARTH 340-0	Physics of Weather & Climate
EARTH 343-0	Earth System Modeling

EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences
EARTH 360-0	Instrumentation and Field Methods
EARTH 361-0	Scientific Programming in Python

**Economics**

Course	Title
ECON 307-0	Economics of Medical Care
ECON 308-0	Money and Banking
ECON 309-0	Public Finance
ECON 310-1	Microeconomics
ECON 310-2	Microeconomics
ECON 311-0	Macroeconomics
ECON 316-0	Advanced Topics in Macroeconomics
ECON 325-0	Economic Growth & Development
ECON 326-0	The Economics of Developing Countries
ECON 327-0	Economic Development in Africa
ECON 329-0	Experimental Economics
ECON 330-0	Behavioral Economics
ECON 331-0	Economics of Risk and Uncertainty
ECON 336-0	Analytic Methods for Public Policy Analysis
ECON 337-0	Economics of State and Local Governments
ECON 339-0	Labor Economics
ECON 340-0	Economics of the Family
ECON 341-0	Economics of Education
ECON 342-0	Economics of Gender
ECON 349-0	Industrial Economics
ECON 350-0	Monopoly Competition & Public Policy
ECON 351-0	Law and Economics
ECON 354-0	Issues in Urban and Regional Economics
ECON 355-0	Transportation Economics and Public Policy
ECON 358-0	Economics of Art and Culture
ECON 359-0	Economics of Nonprofit Organizations
ECON 360-1	Foundations of Corporate Finance Theory
ECON 360-2	Investments
ECON 361-0	International Trade
ECON 362-0	International Finance
ECON 371-0	Economics of Energy
ECON 372-0	Environmental Economics
or ECON 373-0	Natural Resource Economics
ECON 380-1	Game Theory
ECON 381-1	Econometrics
ECON 381-2	Econometrics
ECON 383-0	Applied Econometrics

**Electrical Engineering**

Course	Title
ELEC_ENG 328-0	Information Theory & Learning
ELEC_ENG 331-0	Introduction to Computational Photography
ELEC_ENG 332-0	Introduction to Computer Vision
ELEC_ENG 335-0	Deep Learning Foundations from Scratch
ELEC_ENG 373-0	Deep Reinforcement Learning
ELEC_ENG 375-0	Machine Learning: Foundations, Applications, and Algorithms

**Engineering Sciences and Applied Mathematics**

Course	Title
ES_APPM 344-0	High Performance Scientific Computing
ES_APPM 346-0	Modeling and Computation in Science & Engineering
ES_APPM 370-1	Introduction to Computational Neuroscience
ES_APPM 375-1	Quantitative Biology I: Experiments, Data, Models, and Analysis
ES_APPM 375-2	Quantitative Biology II: Experiments, Data, Models, and Analysis

**Global Health Studies**

Course	Title
GBL_HLTH 320-0	Qualitative Research Methods in Global Health
GBL_HLTH 303-0	(Re)mixing Qualitative Methods

**Industrial Engineering and Management Sciences**

Course	Title
IEMS 308-0	Data Science and Analytics
IEMS 313-0	Foundations of Optimization
IEMS 315-0	Stochastic Models
IEMS 317-0	Discrete Event Systems Simulation
IEMS 340-0	Qualitative Methods in Engineering Systems
IEMS 341-0	Social Networks Analysis
IEMS 351-0	Optimization Methods in Data Science

**Integrated Marketing and Journalism**

Course	Title
IMC 302-0	Research and Data Analytics
IMC 307-0	Digital, Social and Mobile Marketing
JOUR 342-1	Knight Lab: Studio
JOUR 342-2	Knight Lab: Artificial Intelligence in Media
JOUR 377-0	Introduction to Data Journalism

**Linguistics**

Course	Title
LING 334-0	Introduction to Computational Linguistics

**Mathematics**

Course	Title
MATH 306-0	Combinatorics & Discrete Mathematics
MATH 308-0	Graph Theory
MATH 310-1	Probability and Stochastic Processes
MATH 310-2	Probability and Stochastic Processes
MATH 310-3	Probability and Stochastic Processes
MATH 311-1	MENU: Probability and Stochastic Processes
MATH 311-2	MENU: Probability and Stochastic Processes
MATH 311-3	MENU: Probability and Stochastic Processes
MATH 314-0	Probability and Statistics for Econometrics
MATH 366-0	Mathematical Models in Finance
MATH 368-0	Introduction to Optimization
MATH 370-0	Mathematical Logic
MATH 386-1	Econometrics for MMSS
MATH 386-2	Econometrics for MMSS

**Music Theory**

Course	Title
MUS_THRY 348-0	Corpus Studies

**Political Science**

Course	Title
POLI_SCI 310-0	Methods of Political Inference
POLI_SCI 312-0	Statistical Research Methods

**Psychology**

Course	Title
PSYCH 345-0	Presenting Ideas & Data
PSYCH 369-0	Psychological Tests & Measures
PSYCH 380-0	Advanced Statistics & Experimental Design
PSYCH 387-0	Consumer Psychology and Marketing Research

**School of Education and Social Policy**

Course	Title
SESP 272-0	Field Research Methods
SOC_POL 330-0	Economics of Social Policy
SOC_POL 331-0	Economics of Inequality and Discrimination
SOC_POL 333-0	Economics of Health, Human Capital, and Happiness

**Sociology**

Course	Title
SOCIOL 303-0	Analysis and Interpretation of Social Data
SOCIOL 329-0	Field Research and Methods of Data Collection
SOCIOL 335-0	Sociology of Rational Decision Making

**Statistics and Data Science**

Course	Title
STAT 320-1	Statistical Theory & Methods 1
STAT 320-2	Statistical Theory & Methods 2
STAT 320-3	Statistical Theory & Methods 3
STAT 328-0	Causal Inference
STAT 344-0	Statistical Computing
STAT 348-0	Applied Multivariate Analysis
STAT 350-0	Regression Analysis
STAT 351-0	Design and Analysis of Experiments
STAT 352-0	Nonparametric Statistical Methods
STAT 353-0	Advanced Regression
STAT 354-0	Time Series Modeling
STAT 356-0	Hierarchical Linear Models
STAT 357-0	Introduction to Bayesian Statistics
STAT 365-0	Introduction to the Analysis of Financial Data

**The Data Science Minor in Relation to Majors**

The minor in Data Science can be completed along with any major. The general Weinberg College policies about major/minor pairings apply. Below is clarifying text about how this works with certain majors, and where particular exceptions to general rules are approved.

**The Data Science Minor for Students in the Integrated Science Program**

Students complete all requirements for the ISP major, and requirements for Data Science minor are modified as follows:

- Introductory Statistics course requirement: STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is **waived**

All other Data Science minor requirements must be met.

## The Data Science Minor for Students in the Mathematical Methods in the Social Sciences Program

Students will complete all requirements for the MMSS adjunct major, and requirements for Data Science minor are modified as follows:

- Introductory Statistics course requirement: STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is **waived**

All other Data Science minor requirements must be met.

## The Data Science Minor with the Major in Statistics

Students complete all requirements for Statistics major, and requirements for Data Science minor are modified as follows:

- STAT 201-0 (or COMP\_SCI 110-0) is replaced with another approved course. In most cases, an introductory calculus course that is necessary for the Statistics major will be used as the replacement.
- STAT 202-0, STAT 210-0, STAT 232-0 or equivalent is replaced with another approved course. In most cases, an introductory calculus course that is necessary for the Statistics major will be used as the replacement.

Note: STAT 301-1,2,3 (Data Science with R), STAT 303-1,2,3 (Data Science with Python), and any 300-level electives being used for the Data Science minor cannot be used to fulfill credit requirements for the Statistics major.

All other Data Science minor requirements must be met.

## Swahili

See African Studies (p. 227).

## Turkish

See Middle East and North African Languages (p. 373).

## Urdu

See Asian Languages and Cultures (p. 242).

## Writing Program

writingprogram.northwestern.edu

The Bobbie and Stanton Cook Family Writing Program is an independent Weinberg College unit that seeks to help all Northwestern undergraduates learn to write clearly and persuasively. A core faculty of experienced writing instructors teach the program's main sequence of introductory, intermediate, and advanced expository writing courses. These are listed as:

Course	Title
ENGLISH 105-0	Expository Writing
ENGLISH 105-7	College Seminar
ENGLISH 105-8	First-Year Writing Seminar
ENGLISH 106-1 & ENGLISH 106-2	Writing in Special Contexts and Writing in Special Contexts
ENGLISH 205-0	Intermediate Composition
ENGLISH 282-0	Writing and Speaking in Business
ENGLISH 304-0	Practical Rhetoric
ENGLISH 305-0	Advanced Composition

Writing courses are limited to 15 students, allowing instructors to comment extensively on students' writing and to meet regularly with students in individual conferences. Courses at every level emphasize revision, with the goal of strengthening each student's ability to think clearly, analyze carefully, argue convincingly, and communicate effectively.

The Cook Family Writing Program also operates the Writing Place, a center that provides free composition tutoring and consulting for all Northwestern students. The Writing Place, located in University Library, is open most mornings, afternoons, and evenings during the academic year. Students may make appointments, use the schedule of drop-in hours, or interact with Writing Place tutors through the campus computer network.

In addition, the program helps to oversee writing requirements—and thus provides writing advising—for undergraduates in Weinberg College, the McCormick School, and the Bienen School. Members of the program faculty teach specialized courses and workshops, as needed. The program has collaborated extensively with other University programs and departments, developing new ways to integrate writing instruction with instruction in other disciplines. For example, faculty from the program and the McCormick School team-teach Design Thinking and Communication (a combination of ENGLISH 106-1 Writing in Special Contexts and DSGN 106-1 Design Thinking and Communication) for first-year engineering students. In this, as in all its courses and special offerings, the program concentrates on helping students develop skill, confidence, and insight as writers.

Students interested in a writing major should see the English Major in Writing in the English section (p. 292).

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