Bulletin of
Duke University

The Graduate School
2025-2026

About the University Bulletins

The Office of the University Registrar is responsible for compiling, producing, and maintaining the bulletin for each school at Duke University. The content for the bulletins is established by the schools in conjunction with the Duke University Bulletins Policy.

The information in this bulletin applies to the academic year 2025-2026 and is accurate and current, to the greatest extent possible, as of August 2025. All bulletins are published online and serve as static documents for historical records of the university. The university reserves the right to change programs of study, academic requirements, teaching staff, the calendar, and other matters described herein without prior notice, in accordance with established procedures.

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Duke University's Mission & History

Mission Statement

Approved by the Duke University Board of Trustees October 1, 1994, and revised February 23, 2001, the Mission Statement for Duke University reads as follows:

"James B. Duke's founding Indenture of Duke University directed the members of the University to 'provide real leadership in the educational world' by choosing individuals of 'outstanding character, ability, and vision' to serve as its officers, trustees and faculty; by carefully selecting students of 'character, determination and application;' and by pursuing those areas of teaching and scholarship that would 'most help to develop our resources, increase our wisdom, and promote human happiness.'

"To these ends, the mission of Duke University is to provide a superior liberal education to undergraduate students, attending not only to their intellectual growth but also to their development as adults committed to high ethical standards and full participation as leaders in their communities; to prepare future members of the learned professions for lives of skilled and ethical service by providing excellent graduate and professional education; to advance the frontiers of knowledge and contribute boldly to the international community of scholarship; to promote an intellectual environment built on a commitment to free and open inquiry; to help those who suffer, cure disease, and promote health, through sophisticated medical research and thoughtful patient care; to provide wide-ranging educational opportunities, on and beyond our campuses, for traditional students, active professionals and life-long learners using the power of information technologies; and to promote a deep appreciation for the range of human difference and potential, a sense of the obligations and rewards of citizenship, and a commitment to learning, freedom and truth.

"By pursuing these objectives with vision and integrity, Duke University seeks to engage the mind, elevate the spirit, and stimulate the best effort of all who are associated with the University; to contribute in diverse ways to the local community, the state, the nation and the world; and to attain and maintain a place of real leadership in all that we do."

Duke University: A Brief Narrative History

Duke University traces its origins to a small school that opened in 1838 in Randolph County, North Carolina. Originally a preparatory school for young men called the Union Institute Academy, it was then chartered as a teaching college named Normal College by the state of North Carolina in 1851. The school underwent another transformation in 1859 when it turned to the Methodist Church for financial support. Reflecting the new partnership, the school's name changed to Trinity College.

From 1842 to 1882, Braxton Craven served as the principal and then president of the institution, overseeing its transition from a tiny schoolhouse to a full-fledged college. Shortly before his death, he helped to establish the Cherokee Industrial School at Trinity College, one of numerous schools established in the United States to "westernize" indigenous students, in this case boys and young men from the Eastern Band of the Cherokee. The School at Trinity lasted only a few years. It is worth noting that Craven enslaved several Black people prior to the Civil War, and that a number of other faculty and trustees were also enslavers.

John F. Crowell, Trinity College's president from 1887-1894, suggested that moving the college to an urban setting would attract more students, faculty, and financial support. With Crowell's encouragement, the trustees agreed to move the college, and after a spirited competition among regional cities, Trinity opened in Durham in 1892. Local tobacco magnates Washington Duke and Julian S. Carr assisted in providing land and money to Trinity. In 1897, at Washington Duke's request, the school began admitting women as regular students, making it an early co-educational institution. Carr's support for Trinity College was recognized with a building named in his honor in 1930. His name was removed in 2018 in light of his virulent white supremacist beliefs and actions.

Trinity prospered in its new location, and in 1924 the school was again transformed through philanthropy. Washington Duke's son James Buchanan Duke established the Duke Endowment, and the charitable foundation infused the college with funds. The trustees changed Trinity College's name to Duke University as a memorial to his father. The new funds supported the construction of a new campus, designed in a Gothic style by the Philadelphia architectural firm of Horace Trumbauer. The chief designer of West Campus, as well as the re-envisioned East Campus, was Julian Abele, a Black architect whose role in creating the architecture of Duke University was largely overlooked during his lifetime. In 2016, the main quad on West Campus was renamed Abele Quad in his honor.

President William P. Few (1910-1940) oversaw this metamorphosis of a small college into a complex university. In 1930, the Trinity College site (today's East Campus) became the Woman's College, while the West Campus served as the grounds for the all-male Trinity College. In 1972, Trinity College merged both colleges of men and women into what is now known as Trinity College of Arts and Sciences. Other schools include the School of Religion and Graduate School founded in 1926, the School of Medicine and hospital in 1930, and the School of Nursing in 1931. Originally established in 1904, the Law School reorganized in 1930. In 1938, what is today's Nicholas School of the Environment opened, and in 1939 the university formed what is now known as the Pratt School of Engineering. The last of James B. Duke's desires for the university was fulfilled when what is now the Fuqua School of Business, opened in 1969. The Sanford School of Public Policy became Duke's tenth school in 2005. The school was named for President Terry Sanford, formerly the governor of North Carolina, who supported a number of initiatives in the 1970s and 1980s to build Duke's reputation for excellence, growing the university's national and international profile.

Long a segregated institution, Duke first admitted Black graduate and professional students in 1961 and Black undergraduates in 1963. In 1968, a major student protest known as the Vigil demanded pay increases and better treatment of hourly workers, most of whom were Black. In 1969, Black students protested in what is now known as the Allen Building Takeover, demanding improved services and treatment for Black students. The protest resulted in the formation of what is now called the Department of African and African American Studies.

Faculty at Duke produce influential scholarship across a wide range of disciplines and professions. Two Duke faculty members have received the Nobel Prize in Chemistry: Professor Robert Lefkowitz in 2012 and Professor Paul Modrich in 2015. Duke researchers have mapped the human chromosome and led research into the treatment of HIV and AIDS. Duke faculty also research pressing social issues, producing high-impact scholarship on such topics as election districting and public health. Faculty authors have written books of award-winning nonfiction, fiction, and poetry, and have won awards ranging from the National Book Award to the Pulitzer Prize. Fifty Duke faculty are members of the American Academy of Arts and Sciences. Duke students have many opportunities to work with leading faculty in labs and on projects, ensuring hands-on experience during their course of study.

Duke has a number of notable athletic achievements. Best known is the men's basketball team, coached by Mike Krzyzewski from 1980 to 2022. The team has earned 5 national championships. The women's golf team holds the record at Duke for most national championships, at 7. Duke football has been played since the 1880s, when President Crowell coached the team himself. During the 1930s and 1940s, the football team competed in and won a number of bowl games, earning the nickname "Iron Dukes." The Rose Bowl game of 1942 was played in Durham due to wartime concerns on the West Coast and remains the only Rose Bowl played outside of Pasadena, California.

International programs have expanded over the last several decades, bringing international students to Duke in Durham and expanding international opportunities for Duke students. In 2005, Duke partnered with the National University of Singapore and opened the Duke-NUS Medical School. In 2014, graduate programs at Duke Kunshan University began, followed by undergraduate programs in 2018. DKU is a partnership between Duke and Wuhan University in Kunshan, China.

The university has changed in many ways since its founding, and like other historically white schools it continues to confront issues of racism, sexism, and other inclusion and equity challenges. Students of color and international students now represent more than 50% of the student body. Duke's hometown of Durham has also grown and changed, and Duke and Durham collaborate on topics ranging from community service to downtown development.

Ever evolving, Duke University strives to meet the stated aims of the university: “to foster a lively relationship between knowledge and faith; to advance learning in all lines of truth; to defend scholarship against all false notions and ideals; to develop a love of freedom and truth; to promote a respectful spirit of dialogue and understanding; to discourage all partisan and sectarian strife; and to further the advancement of knowledge in service to society.”

Updated September 21, 2020. Learn more from University Archives.

Duke University Leadership & Faculty

Full leadership profiles for those listed below are available at duke.edu/about/leadership.

Executive Leadership

Vincent E. Price, President
Craig Albanese, CEO, Duke University Health System
Daniel Ennis, Executive Vice President
Alec Gallimore, Provost
Mary E. Klotman, Executive Vice President for Health Affairs, Duke University

Academic Leadership

Deans of Schools and Colleges

Kerry Abrams, James B. Duke and Benjamin N. Duke Dean of the School of Law
Suzanne Barbour, Dean, Graduate School
Lori Bennear, Stanback Dean, Nicholas School of the Environment
Gary Bennett, Dean, Trinity College of Arts and Sciences
Edgardo Colón-Emeric, Dean, Divinity School
Mary E. Klotman, Dean, School of Medicine
Jerome P. Lynch, Dean, Pratt School of Engineering
Mary Frances Luce, Interim Dean, Fuqua School of Business
Manoj Mohanan, Interim Dean, Sanford School of Public Policy
Micheal Relf, Dean, School of Nursing

Vice Provosts

Lee Baker, Vice Provost for Undergraduate Education (effective October 1)
Edward Balleisen, Vice Provost for Interdisciplinary Studies
Abbas Benmamoun, Vice Provost for Faculty Advancement
David Bowersox, Vice Provost for Finance & Administration
Mary Pat McMahon, Vice Provost/Vice President of Student Affairs
Mohamed Noor, Executive Vice Provost
Noah Pickus, Associate Provost
Deborah F. Rutter, Vice Provost for the Arts
Joseph Salem, Rita DiGiallonardo Holloway University Librarian and Vice Provost for Library Affairs, & Interim Vice Provost for Learning Innovation & Lifetime Education and Digital Education
Toddi Steelman, Vice President and Vice Provost for Climate and Sustainability

University Administration

Maggie Epps, Secretary to the Board of Trustees and Chief of Staff to the President
Tracy Futhey, Vice President for Information Technology and Chief Information Officer
Leigh P. Goller, Chief Audit, Risk and Compliance Officer
Kimberly Hewitt, Vice President for Institutional Equity and Chief Diversity Officer
David L. Kennedy, Vice President for Alumni Engagement and Development
Nina E. King, Vice President and Director of Athletics
Jennifer Lodge, Vice President for Research & Innovation
Antwan Lofton, Vice President of Human Resources & Chief Human Resources Officer
John J. Noonan, Vice President for Facilities
Rachel L. Satterfield, Vice President for Finance and Treasurer
Chris Simmons, Vice President for Government Relations
Kim Taylor, Vice President and General Counsel
Frank Tramble, Vice President for Communications, Marketing and Public Affairs
Neal Triplett, President, DUMAC
Stelfanie Williams, Vice President for Community Affairs

The Faculty

Duke faculty are chosen from among the most competitive selection processes in the country, having demonstrated excellence in their fields of research. Profiles of Duke's faculty members are available via Scholars@Duke.

Duke University Policies

Accreditation

Duke University is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award baccalaureate, masters, doctorate, and professional degrees. Contact SACSCOC at sacscoc.org or call (404) 679-4500 for questions about the accreditation of Duke University.

Clery Act

Information that the university is required to make available under the federal Clery Act is available by visiting the Records Division, Duke University Police Department, 502 Oregon Street, Durham, NC 27708, or by calling (919) 684-4602. See police.duke.edu/news-stats/clery for more details.

Duke's Commitment to Inclusive Excellence

Duke aspires to create a community built on collaboration, innovation, creativity, and belonging. Our collective success depends on the robust exchange of ideas—an exchange that is best when the rich diversity of our perspectives, backgrounds, and experiences flourishes. To achieve this exchange, it is essential that all members of the community feel secure and welcome, that the contributions of all individuals are respected, and that all voices are heard. All members of our community have a responsibility to uphold these values.

Find more details at provost.duke.edu/about.

Duke Community Standard

Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and nonacademic endeavors, and to protect and promote a culture of integrity.

To uphold the Duke Community Standard:

- I will not lie, cheat, or steal in my academic endeavors;
- I will conduct myself honorably in all my endeavors; and
- I will act if the Standard is compromised.

Students' Obligation to Act with Respect to the Duke Community Standard

The Duke Community Standard (DCS) stresses the commitment that students share with all members of the community to enhance the climate for honesty, fairness, respect, and accountability at Duke University. Students affirm their commitment to foster this climate by signing a pledge that includes taking constructive action if they witness or know about behavior they perceive to be inconsistent with the DCS, which may include violation of university policies. Although there are no disciplinary sanctions associated with the failure to act, students are nonetheless expected to take action to do something as a responsibility of membership in the Duke community.

The university recognizes that it is not always easy to act in these situations, but several alternatives are available to suit a student's level of comfort and confidence. These alternatives are not mutually exclusive.

- Speaking directly with the individual exhibiting the behavior, both to gain clarity about the situation and to inform the individual about the concern.
- Publicly calling attention to the behavior as it is occurring.
- For incidents involving social behaviors, alerting residence hall, Student Affairs, or other university staff. The information provided will give staff an opportunity to address the matter informally or through appropriate formal channels.
- For cases involving academic integrity, alerting the instructor that cheating may be occurring in the course. This alert can be in any form, including anonymous notification, and the reporting student will not be identified. The information provided will allow the faculty member to consider corrective measures, in consultation with the Office of Student Conduct and Community Standards, and to address the topic with the class or suspected student(s).
- Directly alerting staff in the Office of Student Conduct and Community Standards at (919) 684-6938 or conduct@duke.edu, who will confer with the faculty member involved, if an academic issue, or with the reporting student(s), strategizing next steps. Maintaining the confidentiality of the source is possible, but may limit the extent of action that can be taken.

For current regulations, refer to dukecommunitystandard.students.duke.edu.

Family Educational Rights & Privacy Act (FERPA)

The Family Educational Rights & Privacy Act (FERPA), 20 U.S.C § 1232g; 34 CFR Part 99, is a federal law that guides the release of students' education records, of which disciplinary records are a part.

Duke University adheres to a policy of compliance with the Family Educational Rights and Privacy Act. The policy (1) permits students to inspect their education records, (2) limits disclosure to others of personally identifiable information from education records without students' prior written consent, and (3) provides students the opportunity to seek correction of their education records where appropriate.

For additional information about FERPA, see studentprivacy.ed.gov/ferpa. For Duke's full FERPA policy, visit registrar.duke.edu/student-resources/family-educational-rights-and-privacy-act-ferpa.

Nondiscrimination Statement

Duke is committed to encouraging and sustaining a learning and work community that is free from prohibited discrimination and harassment. Duke does not discriminate on the basis of age, color, disability, ethnicity, gender, gender identity, gender expression, genetic information, national origin, race, religion, sex (including pregnancy and pregnancy-related conditions), sexual orientation, or military status, in the administration of its educational policies, admission policies, financial aid, employment, or any other institution program or activity.

Duke has designated the Vice President for Institutional Equity and Chief Diversity Officer as the individual responsible for the coordination and administration of its nondiscrimination and harassment policies.

Questions or comments about harassment or discrimination can be directed to one of the following administrators in the Office for Institutional Equity.

Discrimination in Duke's programs and activities:

Cynthia Clinton, AVP Harassment and Discrimination Prevention and Compliance
Title IX Coordinator
Office for Institutional Equity
114 S. Buchanan Blvd., Bay 8
Durham, NC 27708
(919) 684-8222

Sex discrimination in educational programs or activities:

Adrienne Allison, Deputy Title IX Coordinator for Students, Compliance Investigator
Office for Institutional Equity
114 S. Buchanan Blvd., Bay 8
Durham, NC 27708
(919) 684-8222

The complete text of Duke's Policy on Prohibited Discrimination, Harassment, and Related Misconduct and appropriate complaint procedures, may be found by visiting the Office for Institutional Equity's website. Additional information and resources are available through the U.S. Department of Education Office for Civil Rights, or call 1-800-421-3481.

Duke University Resources

Academic Resources

Duke University Libraries

The Duke University Libraries are the shared center of the university's intellectual life. The William R. Perkins Library, Bostock Library, and Rubenstein Rare Book & Manuscript Library comprise the main West Campus library complex, which is joined by Lilly and Music libraries on East Campus and the separately administered libraries serving the schools of Business, Divinity, Law, and Medicine. Together they form one of the nation's top ten private university library systems.

Institutes, Initiatives & Centers

The university institutes, initiatives and centers complement the widespread interdisciplinarity found in every school at Duke. They serve as crucial incubators of innovations in research, teaching and community engagement. Find a complete list of institutes, initiatives, and centers at interdisciplinary.duke.edu/university-institutes-initiatives-centers.

Interinstitutional Agreement with Neighboring Universities

Under a plan of cooperation—the interinstitutional agreement among Duke University and The University of North Carolina at Chapel Hill, North Carolina State University, North Carolina Central University, The University of North Carolina at Charlotte, and The University of North Carolina at Greensboro—a student regularly enrolled in Duke University as a degree-seeking student and paying full fees may enroll for one approved course each semester at one of the institutions in the cooperative program unless an equivalent course is offered at Duke in the same academic term. Credit so earned is not defined as transfer credit since grades in courses taken under the interinstitutional agreement are entered on the official record and used in determining the grade point average. Additional information is available at registrar.duke.edu/registration/interinstitutional-registration.

Technology Resources

- The Office of Information Technology (oit.duke.edu)
- Computing and Networking (wireless.duke.edu)

- Printing and Labs (oit.duke.edu/services-tools/printers-labs)
- Support and Training (oit.duke.edu/services-tools/support-training)

Continuing Studies Programs

Duke University offers a variety of pre- and post-college learning opportunities for learners across a wide variety of ages, backgrounds, and geographies. Overseen by Duke Learning Innovation & Lifetime Education (LILE), Duke's continuing students programs provide many opportunities for academic achievement, professional development and personal enrichment. Information about all programs listed below is available at learnmore.duke.edu.

For-Credit Academic Study

Admission to the Continuing Studies Program is discretionary. For consideration for admission, applicants to the Continuing Studies Program must meet at least one of the following two criteria:

- Earned a bachelor's degree from a college or university accredited by a national or regional accrediting body recognized by the Department of Education.
- Age 25 or older, and intend to initiate or complete academic study in a Duke University academic program.

Students are given academic counseling by LILE, and are subject to the regulations set forth for degree candidates, unless explicitly noted otherwise. A junior or senior who is currently enrolled at an external college or university who wishes to pursue an academic discipline unique to Duke University, may apply at learnmore.duke.edu/academics/undergraduate for admission as a nondegree, full-time visiting student for one or two semesters. Students with unique circumstances should contact LILE at learnmore@duke.edu.

Minimum GPA Requirement. Successful applicants are expected to have earned a minimum 3.0 GPA in their most recent program.

Applicants who fail to meet the minimum GPA requirement are subject to additional review and may be admitted on a provisional basis. As part of the additional review, the following will be taken under consideration:

- The applicant has not been enrolled as a full-time student in the last 4 years, and
- The applicant demonstrates the ability to successfully complete college level coursework by earning a passing grade (B or better) in a minimum of 4 courses during the last 2 years.

As part of a provisional admission, a student must earn a minimum 3.0 GPA in the semester immediately following the provisional admission.

Withdrawal. If a student enrolled in a Duke University program withdraws from the program, or is no longer in good academic standing, they must wait two academic terms before re-applying to any Duke program, including any continuing studies programs (see the Satisfactory Continuation Requirements outlined in the Bulletin of Undergraduate Instruction).

Semester Continuation Requirements. Semester continuation requires that you earn a passing grade (C-or better) in a minimum number of courses to remain in good standing. Students who receive at least one failing grade (D, D-, F) are subject to academic probation or academic dismissal.

Academic Probation	Earned D or D-in at least one course Earned F in one course, and C-or better in at least two courses
Academic Dismissal	Earned F in at least one course

Students placed on academic probation must acknowledge their probationary status in writing to the academic dean for Continuing Studies students, in order to continue into the next academic term. They are also expected to seek assistance from campus resources and have their course selection approved by their academic dean. In the probationary term they must earn grades of C or better in all courses to continue. Students who withdraw from all courses must wait two semesters to submit a request to return to study.

Program and application information is available at learnmore.duke.edu/academics/undergraduate. Application deadlines: August 1 for the fall semester, December 1 for the spring semester, April 15 for Term 1 of the summer session, and June 1 for Term 2 of the summer session.

Certificate Programs

Professional Certificates are designed with the needs of working adults in mind, with classes offered in the evening and on weekends. Current programs offered include business and finance, human resources, legal, management, Six Sigma, technology solutions , and more.

Nonprofit Management Program

Learners interested in the nonprofit sector or in community development are invited to explore the noncredit course offerings of this program. Taught by experts and practitioners, these short courses offer instruction concerning financial and resource management, management of personnel and volunteers, leadership development, fundraising, planning and evaluation, board development/governance, and media relations.

Osher Lifelong Learning Institute (OLLI) at Duke

OLLI at Duke began in 1977 as the Duke Institute for Learning in Retirement. Since 2004 the membership organization has been a member of the Osher Lifelong Learning Network, a group of more than 120 institutes across the country dedicated to meeting the needs of older learners and extending the demographic served by traditional universities. OLLI sponsors noncredit course offerings in the fall, winter, and spring as well as special interest groups and volunteer opportunities.

Pre-College

Duke Pre-College programs offer academic enrichment opportunities for academically-motivated middle and high school students in the summer. Current offerings include residential summer camps on Duke's campus and at the Duke Marine Lab, online courses, a coding camp, and community days for local students to experience learning at Duke.

Student Disability Access Office (SDAO)

The Student Disability Access Office (SDAO) is the office on campus that has been charged with and is committed to providing educational opportunities for students with disabilities in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990 (ADA), and the ADA Amendments Act of 2008.

Core Functions of SDAO

- To establish services for equitable access on campus through partnership with students with disabilities.
- To manage, coordinate, implement and evaluate accommodation and service programs.
- To serve as a resource to students, faculty, and staff regarding access to academic and campus services
- To provide resource and referral information to the campus community at Duke and prospective students and their families.

SDAO works with each student individually to establish academic accommodations including adjustments, auxiliary aids and services for the purpose of mitigating barriers to students' access to campus facilities, programs, and activities.

For more information, visit access.duke.edu/students.

Duke University Campus Life, Activities & Support

Duke offers a wide variety of resources to help students connect and thrive beyond the classroom.

Dining, Housing & Transportation

- Duke Dining (students.duke.edu/living/dining)
- DukeCard (dukecard.duke.edu)
- Undergraduate Housing (studentaffairs.duke.edu/hdrl)
- Graduate and Professional Student Apartments (students.duke.edu/living/housing/graduate-professional-housing)
- Off-Campus Housing (students.duke.edu/living/housing/graduate-professional-housing/housing-in-durham)
- Parking & Transportation (parking.duke.edu)

Student Affairs & Organizations

- Career Center (careerhub.students.duke.edu)
- Division of Student Affairs (studentaffairs.duke.edu)
- Graduate and Professional Student Government (gpsg.duke.edu)
- Intercollegiate Athletics (goduke.com)
- Religious Life (chapel.duke.edu/religiouslife)

Student Health & Safety

- Campus Police (police.duke.edu)
- Counseling & Psychological Services (CAPS) (studentaffairs.duke.edu/caps)
- DukeReach (students.duke.edu/wellness/dukereach)
- DuWell (studentaffairs.duke.edu/duwell)
- Student Health (studentaffairs.duke.edu/studenthealth)

About The Graduate School

Graduate School Administration

Suzanne E. Barbour, PhD, Dean of The Graduate School and Vice Provost for Graduate Education

Scott Behm, MA, Associate Dean for Communications and Marketing

Shanna Fitzpatrick, MHA, MBA, Senior Associate Dean for Finance and Administration, Chief Financial Officer

John A. Klingensmith, PhD, Senior Associate Dean for Academic Affairs

Yan Li, PsyD, Associate Dean for Graduate Programs

Nicholas Alena, MS, Associate Dean for Graduate Admissions

Message from the Dean

Welcome to The Graduate School. Located in the Research Triangle (Raleigh–Durham–Chapel Hill), Duke stands in the center of a unique cultural environment that is rapidly evolving as a national hub for technological, educational, and research excellence. Students in The Graduate School collaborate with Duke peers, as well as colleagues at other universities, industry leaders, and others, enriching their educational experience and encouraging them to serve broader society outside of the walls of their classrooms and laboratories. The last several years have presented global, social, and academic challenges never before experienced, leading to significant changes in the educational landscape. Duke's graduate students have risen to the occasion, leveraging their training to tackle the grand challenges that face our region, the nation, and the world.

Over the past several years since coming to Duke, I've immersed myself in its culture, formed connections with dedicated graduate faculty and staff, and have gotten to know the exceptional students enrolled in our programs. I'm leveraging this knowledge and these relationships to determine how I can best lead The Graduate School into the future. My emerging vision for The Graduate School is to provide a holistic graduate education that supports students through career development, mentoring, equitable and inclusive educational practices, and a strong focus on mental health and wellness that fosters resilience in the face of adversity. As the demographics of our student body shift to include more students from all walks of life and those who are pursuing an increasingly diverse array of career paths, our policies, procedures, and institutional culture will have to change as well to ensure we both attract—and retain—a student body with diversity of thought, background, and culture.

In my time here, I've learned that The Graduate School at Duke is a vibrant community and an international leader in graduate education. Our faculty and students are at the forefront of research and scholarship across the myriad disciplines represented in the School. The hallmark of graduate education at Duke is a rich blend of deep, specialized knowledge in a field of study, intersectional discovery in complementary fields, and a commitment to student health, wellness, engagement, and support. I can already say that I'm proud to be a part of such a community, and look forward to serving the students, faculty, and staff of this institution.

Suzanne E. Barbour, PhD
Dean of The Graduate School
Vice Provost for Graduate Education Duke University

Faculty

A full list of graduate faculty is maintained by The Graduate School here. Full profiles are available on Scholars@Duke.

About The Graduate School

History of The Graduate School

The Duke University Graduate School, established in 1926, currently enrolls approximately 3,500 graduate students in a wide range of research master's (MA/MS) and doctoral (PhD) degree programs. The Graduate School offers graduate education in more than eighty departments or programs of study where students work closely with faculty across Duke's ten other schools. By attracting the best domestic and international graduate students to work in cutting-edge fields of knowledge, The Graduate School plays a key role in supporting the Mission of Duke University by serving: "...to prepare future members of the learned professions for lives of skilled and ethical service by providing excellent graduate and professional education; to advance the frontiers of knowledge and contribute boldly to the international community of scholarship; to promote an intellectual environment built on a commitment to free and open inquiry...to engage the mind, elevate the spirit, and stimulate the best effort of all who are associated with the University; to contribute in diverse ways to the local community, the state, the nation, and the world."

The Graduate School helps to strengthen the intellectual life of the university by supporting and expanding on the scholarly activities of its faculty. Moreover, Duke's graduate students have many opportunities to participate in leadership roles on campus or in surrounding communities, to serve as teachers and mentors who bridge faculty and undergraduate students, or to develop professionally through conducting and presenting their own research.

The Graduate School welcomes prospective students and guests to visit its home, located on a quiet corner of Campus Drive on Duke's West Campus. Built in 1931 for the family of Duke administrator Robert L. Flowers, the historic stone building later housed University Development offices prior to The Graduate School's move in 2009. This central location provides services for more than eighty graduate departments and programs, working in conjunction with the other nine professional schools; the building is home to Graduate Academic Affairs, Admissions, Finance and Administration, and Student Affairs.

About The Graduate School

Standards of Conduct

Graduate students at Duke University freely choose to join a community of scholarship predicated on the open exchange of ideas and original research. At Duke University, students assume the responsibility to foster intellectual honesty, tolerance, and generosity and to encourage respectful debate and creative research. By accepting admission to Duke University, graduate students pledge to uphold the intellectual and ethical standards of the university, as expressed in the Duke Community Standard, to respect the rights of their colleagues, to abide by university regulations, and to obey local, state, and federal laws.

Failure of a graduate student to adhere to the Duke Community Standard is likely to result in dismissal from Duke University. The Graduate School and the university specifically prohibit the following:

1. **Lying.** Knowing misrepresentations to gain illicit benefit or to cause harm to others. This includes but is not limited to, communicating a falsehood to gain an academic, professional, or personal advantage that has an impact on students, faculty, or administration of the university.
2. **Cheating.** A dishonest or unfair action to advantage an individual's academic work or research. Such dishonesty would include the falsification of data; plagiarism or otherwise representing someone else's work as your own; and tampering with another person's documents or research materials.
3. **Theft.** Misappropriation of property, services, credentials, or documents. Theft includes the misuse or willful damage of university property, equipment, services, funds, library materials, or electronic networks.
4. **Harassment.** The creation of a hostile or intimidating environment based, for example, on age, color, disability, national origin, sex, gender identity, gender expression, race, religion, class, institutional status, sexual orientation, or on some other basis, in which unwelcome verbal or physical conduct, because of its severity, pervasiveness, and/or persistence, unreasonably and significantly interferes with an individual's work or education, or affects adversely an individual's living conditions. Duke University is committed to protecting academic freedom for all members of the university community. This policy against harassment is, therefore, applied to protect the rights of all parties to a complaint. Academic freedom and freedom of expression include, but are not limited, to the expression of ideas, however controversial, in the classroom, residence hall, and, in keeping with different responsibilities, in workplaces elsewhere in the university community. University policy also prohibits domestic violence, dating violence, and stalking.
5. **Sexual harassment.** The creation of a hostile or intimidating environment through unwelcome conduct of a sexual nature that, because of its severity, pervasiveness, and/or persistence, unreasonably and significantly interferes with an individual's work or education, or adversely affects an individual's living conditions. Sexual harassment also includes verbal or written threats, unwanted sexual solicitation, stalking, and the use of a position of authority to intimidate or coerce others (e.g., where submission to conduct of a sexual nature is used as a basis for decisions affecting an individual's education or employment). Duke teaching personnel, employees, and graduate students are expected to report consensual sexual relationships between individuals in a supervisory or teaching relationship to their superiors under the Consensual Relationship Policy and Appendix Z of the Faculty Handbook. Examples of such supervisory/teaching relationships include instructor and student; advisor and student; and supervisor and staff member.
6. **Assault.** An attack on another person resulting in either physical or psychological injury.
7. **Possession of illicit drugs on university property or as part of any university activity.** Students are prohibited to manufacture, sell, deliver, possess, or use a controlled substance without legal authorization. The North Carolina Controlled Substances Act defines a controlled substance as any drug, substance, or immediate precursor, including but not limited to opiates, barbiturates, amphetamines, marijuana, and hallucinogens. Possession of drug paraphernalia is also prohibited under North Carolina law and university policy. Drug paraphernalia includes all equipment, products, and material of any kind that are used to facilitate, or intended or designed to facilitate, violations of the North Carolina Controlled Substances Act.
8. **Refusal to comply with the directions of a university police officer.** Students must comply with the lawful directions of the university police. In addition, interference with the proper operation of safety or security devices**,** including emergency telephones, door locks, fire alarms, smoke detectors, or any other safety device is prohibited.
9. **Trespassing.** Students may not enter university property to which access is prohibited.
10. **Possession of explosives, incendiary devices, or firearms on university property.**

Failure to meet these requirements and to abide by the rules and regulations of Duke University may result in summary dismissal by the dean or academic dean of The Graduate School. In accepting admission, students indicate their willingness to subscribe to and be governed by these rules and regulations and acknowledge the right of the university to take disciplinary action, including suspension and/ or expulsion, as may be deemed appropriate for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the university. In addition, students must meet academic requirements and financial obligations, as specified elsewhere in this bulletin, to remain in good standing.

Student Grievance Procedures

The Graduate School is committed to a fair hearing and resolution of any student grievance. Graduate students with grievances may wish to consult their DGS, who can inform them of the appropriate channels to address a student grievance.

Students who wish to appeal a grade should do so by request of the instructor of the course in question. The instructor may change the grade if they determine the original grade was given in error. If, after review by the instructor, the student still wishes to appeal the grade, the student should do so in writing directly to the department chair or program director of the unit that sponsors the course. This official will review the circumstances of the grade and advise the instructor and student as to whether the grade was appropriate or not. Only the instructor can change the grade itself.

Complaints of discrimination, harassment (including sexual harassment), domestic violence, dating violence, and stalking committed by students, employees, and third parties (e.g., vendors, contractors, and visitors) are considered by central university offices and staff, such as the Office of Student Conduct and the Office for Institutional Equity. Students may consult these offices or The Graduate School for guidance on how to file complaints of this general nature.

In other circumstances, such as academic status or financial complaints, the DGS is generally the first to hear the substance of a complaint. If the complaint cannot be resolved satisfactorily at this level, or if the student is not comfortable discussing the grievance with the DGS, the student may ask the grievance be considered by the program chair, or by a faculty committee within the program appointed by the chair. Students or program faculty who are unable to resolve grievances at the level of the degree program may contact the relevant associate dean of The Graduate School (gradschool.duke.edu/about/staff-directory). For academic matters, the contact is the associate dean for academic affairs; for financial concerns, the contact is the associate dean for finance and administration; for grievances related to student life, the contact is the associate dean for graduate student affairs; for admissions complaints, the contact is the associate dean for admissions. The appropriate associate dean will consider a written grievance document, together with all the evidence and circumstances of the grievance as supplied by the student, program, and other relevant parties. The associate dean will decide to resolve the grievance and communicate it in writing to the student. If necessary, as the final avenue of appeal, the student may ask subsequently for the grievance to be considered by the dean of The Graduate School. Any grievance or appeal must be filed in writing with the next appropriate university officer within ten days after a decision has been formally rendered by any of the university officers mentioned above.

The DGS will inform the relevant associate dean of any student grievances and their resolution in the annual report of the program. The deans will keep confidential records of all student grievances filed with them, the process by which they were considered, and their resolution.

Judicial Code and Appeals Procedure

In the spring of 1971, The Graduate School community ratified and adopted an official judicial code and procedures for disciplinary matters. These procedures were subsequently amended in November 1998 and in May 2007.

I. Graduate School Judicial Code and Procedures

1. A student, by accepting admission to The Graduate School of Duke University, thereby indicates a willingness to subscribe to and be governed by the rules and regulations of the university as currently are in effect or, from time to time, are put into effect by the appropriate authorities of the university, and indicates a willingness to accept disciplinary action, if behavior is adjudged to be in violation of those rules or in some way unacceptable or detrimental to the university. However, a student's position of responsibility to the authorities and the regulations of the university in no way alters or modifies responsibilities in relation to civil authorities and laws.
2. A graduate student at Duke University stands in a primary and unique relation of responsibility to the faculty in the major department, the faculty upon whose recommendation a graduate degree will or will not be awarded to the student. In matters which involve or may affect the student's intellectual or professional life, the student is directly responsible to this department and its representatives, and such matters should primarily be handled by the department.
3. Actions that appear to conflict with university-wide rules and regulations will fall under the jurisdiction of the University Judicial Board.
4. At the final level of appeal, a student may elect to have the dean of The Graduate School hear matters related to the student's conduct or may elect to have such matters reviewed and judged by a Judicial Board of faculty and students appointed by the dean of The Graduate School. (The constitution and procedure of the judicial board are detailed below.)
5. The director of graduate studies or the chair in the student's degree program or major department may request that a student's actions be reviewed by the Judicial Board or by the dean of The Graduate School.

II. The Graduate School Judicial Board

1. **Composition.** The Graduate School Judicial Board shall have five members, serving on an ad hoc basis or for two years, at the discretion of the dean: two graduate students appointed from the student body by the dean of The Graduate School with the advice of the Graduate and Professional Student Council, two members of the graduate faculty appointed by the Executive Committee of the Graduate Faculty, and one associate or assistant dean appointed by the dean of The Graduate School. The board shall elect one of its members as chair. The board shall have at its service a recording secretary to keep minutes of the hearings and of the board's actions in a permanent, confidential record book. The Board will be constituted to hear cases in which the accused is a student currently enrolled in The Graduate School and in cases in which the accused is a former student but which arise out of activities of the accused while a student enrolled in The Graduate School, and which have been referred to it by the director of graduate studies or the chair of the student's department, by the dean of The Graduate School, or by the student.
2. **Preliminary Procedures.** If a student requests a hearing by the Judicial Board it must be done in writing, allowing the dean at least one week to assemble or notify the board. In addition, the chairman shall not convene the board until at least one week after being asked to convene the board. It is the responsibility of the chair of the Judicial Board fully to inform its members concerning the case and the reasons the case has been referred to the board; and to prepare a written summary of this information for the board, the dean, and the student.
3. **Procedural Safeguards for the Hearing.** The accused has the right to challenge any member of the Judicial Board on grounds of prejudice. If the board decides to excuse one or more of its members for reasons given by the accused, it shall consult with the dean about the need for replacements. The accused may choose an advisor to assist in the hearing. The advisor must be a current Duke student, a current Duke faculty member, or a current Duke employee. The role of the advisor is to assist and support the student through the disciplinary process. The advisor may not address the hearing panel or any witness during the hearing. The accused may also produce witnesses (including no more than two character witnesses), introduce documents, and offer testimony. A person having direct knowledge relevant to a case being heard by the board is a material witness. The Judicial Board may request the appearance of material witnesses. The board shall also request, upon written request of the complainant or the accused, the appearance of material witnesses. Witnesses shall be notified of the time, place, and purpose of their appearance. The accused has the right to examine the written statement of any witness relevant to the case at least seventy-two hours before

the hearing. The accused has the right to be faced with any witness who has given a statement relevant to the case at the hearing if the witness's attendance can be secured. The hearing will be conducted in private unless the accused requests an open hearing. However, any such a hearing must still operate within the context of federal regulations (FERPA). If any objection is raised to conducting an open hearing in any particular case, the Judicial Board shall decide the issue by majority vote. If the decision is made not to hold an open hearing, the accused shall be informed in writing of the reasons for the decision. The Judicial Board shall consider only the report of the chair, documents submitted into evidence, and the testimony of witnesses at the hearing in reaching its decisions.

4. **Conduct of the Hearing.** The hearing of any case shall begin with a reading of the charge by the chairman in the presence of the accused. The accused shall then plead guilty or not guilty or move to terminate or postpone the hearing. The accused may qualify a plea, admitting guilt in part and denying it in part. The accused may not be questioned for more than one hour without recess. At any time during the hearing, the accused or the Judicial Board may move to terminate or postpone the hearing or qualify the plea, or modify its charge. Pending verdict on charges (including appeal) against the accused, status as a student shall not be changed, nor the right to be on campus or to attend classes suspended, except that the provost may impose an interim suspension upon any member of the university community who demonstrates, by conduct, that continued presence on the campus constitutes an immediate threat to the physical well-being or property of members of the university community or the property or orderly functioning of the university.
5. **Sanctions and the Verdict.** The Graduate School Judicial Board shall have the power to impose the following penalties: expulsion (dismissal from the university with the recommendation that the person never be readmitted); suspension (dismissal from the university and from participation in all university activities for a specified period, after which the student may apply for readmission); disciplinary probation (placing the student on a probationary status for a specified period, during which conviction for violation of any regulation may result in more serious disciplinary action); restitution (payment for all, or a portion of property damage caused during the commission of an offense). Restitution may be imposed by itself or in addition to any of the other penalties. In the case of a student who is not currently at Duke or who has already graduated, such sanctions could include revocation of the degree. The judgment shall consist of a finding of guilty or not guilty of the charge and, when the accused is found guilty, a statement of the punishment assessed. On all questions, including the verdict and the finding of guilty or not guilty, the board shall be governed by a majority vote. The Judicial Board may decide to rehear a case in which significant new evidence can be introduced. In addition, the defendant may request an appeal. An appeal shall be granted on the following grounds: procedural error substantially affecting the rights of the accused; incompatibility of the verdict with the evidence; excessive penalty not in accord with "current community standards;" new evidence of a character directly affects the judgment but on which the original tribunal had refused a new hearing.
6. **Appeals.** The appellant may submit to the dean a written statement containing the grounds for a final appeal and arguments. In such cases, the dean should determine if the appeal should be granted, and the dean can hear the case, or refer it to the appropriate faculty in the student's department or to the Judicial Board.

III. Amendment and Construction

This Judicial code and procedure and this constitution and procedure for The Graduate School Judicial Board may be amended at any time with due notice or publication by consent of the dean, the Executive Committee of the Graduate Faculty, and the graduate student representatives of the Graduate and Professional Student Council. Questions and problems not answered or anticipated by the foregoing may be resolved by the use of other existing institutions or by amendment.

Academic Calendar

Summer 2025

- February 17 (M) Registration begins for all summer sessions
- May 14 (W) Summer Term 1 classes begin
- May 16 (F) Drop/Add for Term 1 ends (11:59 PM)
- May 26 (M) Memorial Day holiday. No classes are held
- June 19 (Th) Juneteenth holiday. No classes are held
- June 23 (M) Term 1 classes end
- June 24 (T) Reading period (until 7:00 PM); Term 1 final examinations begin (7:00 PM)
- June 26 (Th) Term 1 final examinations end
- June 30 (M) Summer Term 2 classes begin
- July 2 (W) Drop/Add for Term 2 ends (11:59 PM)
- July 4 (F) Independence Day holiday. No classes are held
- August 8 (F) Term 2 classes end
- August 9 (Sa) Reading period (until 7:00 PM); Term 2 final examinations begin (7:00 PM)
- August 11 (M) Term 2 final examinations end (10:00 PM)

Fall 2025

- August 19 (T) New graduate student orientation begins
- August 24 (Su) First-Year Convocation
- August 25 (M) Fall semester classes begin (8:30 AM); Drop/Add continues

- September 1 (M) Labor Day. No classes are held
- September 5 (F) Drop/Add ends (11:59 PM)
- September 25-28 (Th-Su) Founders' Weekend. Classes are held Thursday and Friday
- October 10 (F) Fall break begins (7:00 PM)
- October 15 (W) Classes resume (8:30 AM)
- October 20 (M) Shopping carts open for Spring 2026
- October 29 (W) Registration begins for Spring 2026
- November 25 (T) Thanksgiving recess begins (10:30 PM); Graduate classes end
- November 26-December 9 (W-T) Graduate reading period
- December 10 (W) Final examinations begin (9:00 AM)
- December 15 (M) Final examinations end (10:00 PM)

Spring 2026

- January 7 (W) Spring semester begins (8:30 AM). A Monday class schedule is followed. Drop/Add continues
- January 19 (M) Martin Luther King Jr. Day holiday. No classes are held
- January 21 (W) Drop/Add ends (11:59 PM)
- February 9 (M) Shopping Carts open for Summer 2026
- February 16 (M) Registration begins for Summer 2026
- March 6 (F) Spring recess begins (7:00 PM)
- March 16 (M) Classes resume (8:30 AM)
- March 23 (M) Shopping Carts open for Fall 2026
- April 1 (W) Registration begins for Fall 2026; Summer registration continues
- April 15 (W) Graduate classes end
- April 16-26 (Th-Su) Graduate reading period
- April 27 (M) Final examinations begin
- May 2 (Sa) Final examinations end (10:00 PM)
- May 8 (F) Commencement begins
- May 10 (Su) Graduation exercises; Conferring of degrees

Summer 2026

- May 13 (W) Summer Term 1 classes begin
- May 15 (F) Drop/Add for Term 1 ends (11:59 PM)
- May 25 (M) Memorial Day holiday. No classes are held
- June 19 (F) Juneteenth holiday. No classes are held
- June 22 (M) Term 1 classes end
- June 23 (T) Reading period (until 7:00 PM); Term 1 final examinations begin (7:00 PM)
- June 25 (Th) Term 1 final examinations end
- June 29 (M) Summer Term 2 classes begin
- July 1 (W) Drop/Add for Term 2 ends (11:59 PM)
- July 3 (F) Independence Day holiday. No classes are held
- August 7 (F) Term 2 classes end
- August 8 (Sa) Reading period (until 7:00 PM); Term 2 final examinations begin (7:00 PM)
- August 10 (M) Term 2 final examinations end (10:00 PM)

Graduate Student Affairs

Core Objectives

The core objectives of Graduate Student Affairs (GSA) are to assess student needs, build student support and resources, and identify, recruit, and retain a student population that represents many life experiences and backgrounds. GSA accomplishes these goals through comprehensive programming developed after evaluating students' needs, partnering with student groups, and actively recruiting and preparing candidates who will fully engage as Duke graduate students. GSA staff combine these program components with innovative outreach, high levels of communication, and advocacy to enhance the quality of graduate student life.

Program Components

GSA hosts signature programs that mark students' progress throughout their graduate careers.

- New Student Orientation aids students in their transition to Duke by providing information about the academic community, policies, and resources.

- The Graduate Student Resource Fair occurs during New Student Orientation and features representatives from various university offices and the local community.
- A Milestone Recognition Reception for Ph.D. candidates honors those who pass preliminary examinations yearly.
- During Commencement weekend, GSA hosts the Ph.D. Hooding Ceremony, which celebrates the culmination of doctoral study.

Professional Development Programs

GSA provides strategic leadership to ensure that Graduate School students can identify the full range of career options available to them and develop the transferable skills to succeed in those careers. The Graduate School sponsors and partners with groups and offices across campus to provide programming, resources, and professional development events to help students during their graduate school journey, from identifying potential career paths to developing the skills to successfully launch their professional lives in those paths. These offerings help prepare students for thriving careers in academia, business, entrepreneurship, government, and nonprofits. For more information, visit The Graduate School's professional development website.

Mentoring

GSA recognizes that mentoring is vital to graduate students' success, and The Graduate School is committed to cultivating a culture of mentoring in graduate education at Duke. Research has found that students with strong mentoring relationships are more productive, more involved in the campus community, and more satisfied with their graduate school experience. In addition, strong mentoring support ensures that students will be well-trained, successfully complete their degrees, and obtain promising job opportunities. A dedicated online mentoring resource repository and a digital mentoring workshop toolkit support graduate students and the university community with the tools to succeed.

Social Programs

GSA coordinates activities designed specifically to encourage social interaction among graduate students. Several events during New Student Orientation Week help new students become acquainted with fellow students and Duke faculty. Graduate and Professional Student Appreciation Week recognizes graduate students' contributions to Duke's academic climate; GSA co-organizes activities during this week in partnership with Graduate and Professional Student Services and other graduate and professional schools across campus. In addition, GSA coordinates the annual Homecoming Celebration and other special events to promote community. Finally, GSA organizes events and provides resources to support graduate student wellness.

Equity and Inclusion

The Graduate School is dedicated to and benefits from engaging a broad array of students, whose work and life experiences contribute to a fuller representation of perspectives within the academic life of the university. The Graduate School encourages applications from all sectors of society. As part of Duke's long-standing commitment to increasing the quality of its graduate student body, The Graduate School works to expand its recruitment and outreach practices to ensure that we attract, admit, and retain outstanding applicants with the full range of experiences and perspectives; provide students with sufficient funding to complete their graduate studies in a timely manner; and promote an academic and social environment where all scholars can flourish. A key mission of the Office of Graduate Student Affairs (GSA) is to coordinate, supplement, and expand the recruiting efforts of graduate departments and programs. Robust recruiting strategies are vital to these efforts, and the involvement of Duke's graduate faculty is central to these strategies. Each year, GSA staff and faculty participate in recruitment fairs across the country that enable us to meet potential graduate students and to answer any questions they might have about Duke's graduate programs. The Graduate School also participates in national consortia designed to promote graduate education and recruitment visits to institutions that serve students from all walks of life. GSA also supports the Summer Research Opportunities Program (SROP) which identifies potential graduate students in the biomedical sciences in their undergraduate years.

Program Support

GSA's programs are developed, supported, and enhanced through four program support elements: advocacy, communications, student group support, and program evaluation. These elements ensure that GSA develops its programs and resources so that they are accessible, inviting, and responsive to the needs of all segments of the graduate community. GSA is committed to giving students access to resources needed to achieve their scholarly, personal, and professional goals by recognizing the importance of student wellness, student groups, and students with families.

Advocacy

GSA makes every attempt to assess and respond to the concerns of Duke graduate students. The Child Care Subsidy for Ph.D. students, the Mentoring Toolkit, and Duke OPTIONS are examples of initiatives that arose from GSA's response to students' expressed needs and concerns. In many instances, GSA is the initial point of contact for graduate students, offering informal counseling, advising, and follow-up.

Furthermore, GSA acts as the liaison between The Graduate School and the Career Center, Counseling and Psychological Services (CAPS), Duke Reach, the Office for Institutional Equity, the Disability Management Office, the central university Office of Student Affairs, and other campus offices. The Office of Graduate Student Affairs collaborates with Duke's graduate departments and the university administration. In addition, GSA representatives are members of national committees, graduate consortia, and professional associations concerned with issues related to graduate student life.

Communications

GSA works directly with The Graduate School's Communications team to ensure cohesive communication within the graduate community and the university. GSA also uses a number of online resources to foster ongoing communication among graduate students, faculty, and staff.

- The Graduate School's monthly newsletter and social media platforms deliver timely, targeted, and relevant information to keep students informed about GSA events and other university resources.
- The school's monthly newsletter highlights student news and recognition, features student profiles, and identifies useful resources. All Graduate School students are automatically subscribed to the newsletter.
- During the academic year, Graduate School students receive a weekly professional development newsletter highlighting events, opportunities, and resources curated for the needs of master's and Ph.D. students. The newsletter features a regular Wellness Spotlight. (The newsletter publishes biweekly in the summer and over breaks.)
- The online Current Students Guide and Student Life sections of The Graduate School website help students quickly find the information they need.

Student Group Support

GSA advises and assists a number of graduate student organizations, including but not limited to these: the Black Graduate and Professional Student Association, the Bouchet Society, Duke Chinese Students and Scholars Association, DukeOUT, the Hurston-James Society, the Graduate and Professional Student Government, oSTEM, GradParents, Duke F1RSTS, the Society for the Advancement of Chicanos and Native Americans in Science, the Society of Duke Fellows, and Women in Science and Engineering. Graduate student groups help GSA invest its resources into programming that addresses the specific needs of various segments of the graduate community that may not be addressed within academic disciplines.

Program Evaluation

Developing formal and informal procedures for program evaluation is crucial in assessing the effectiveness of GSA services and in instituting new programs. Formal evaluation of GSA's programs is carried out through surveys of major activities, followed by analysis and progress reports. Assessment of GSA's effectiveness is also supported by collaborating with other Graduate School offices throughout the admissions process and preparing retention data. Informal evaluations of GSA events are conducted with individual students, student groups, and graduate faculty. Additionally, GSA regularly seeks feedback from its Graduate Student Affairs Advisory Committee (GSAAC). Composed of faculty, students, and staff representing each broad disciplinary area in The Graduate School, GSAAC's role is to serve as an evaluative resource in program development and help adopt specific strategies to meet program goals.

Bass Connections

Bass Connections is a university-wide academic program that brings together faculty, postdocs, graduate/professional students, and undergraduates to explore societal challenges in interdisciplinary research teams. Past teams have tackled a wide array of challenges, ranging from improving educational outcomes for children in Durham, to developing strategies for using American forests and wetlands as carbon sinks, to improving neurosurgery outcomes in Uganda.

Bass Connections includes:

- **Year-Long Research Teams** in which graduate students have the opportunity to receive academic credit or compensation while also gaining experience in applied research, project management, and leading teams
- **Summer Research Programs** in which graduate students serve as mentors for teams of undergraduate students conducting research projects
- **Semester-Long Courses** in which graduate students can gain expertise in addressing complex societal problems and teamwork
- **Student Research Grants** that provide funding for student-driven research projects—collaborative or individual
- **Course Development Grants** that provide support for doctoral students to work with faculty to design courses that integrate collaborative project-based work as a central element of course design

For graduate students, the benefits of participating in Bass Connections include:

- Enhancing dissertation or master's thesis research
- Coauthoring publications
- Deepening relationships with faculty
- Gaining experience in project management and leading teams
- Building career-enhancing skills to stand out on the job market
- Networking with colleagues in diverse fields
- Getting experience mentoring others, particularly undergraduates
- Gaining opportunities for possible funding

Each year, Bass Connections hosts more than sixty year-long research teams, forty summer research teams, and approximately forty courses. For more information on Bass Connections and how to get involved, visit bassconnections.duke.edu.

Office of Research Support

The Office of Research Support (ORS) assists Duke faculty, students, and staff in the following areas:

- For Duke campus faculty, students, and staff, ORS reviews and approves all proposals and awards (including graduate fellowships) requiring an institutional signature. For additional information on this process, see ors.duke.edu/grants-contracts-and-compliance.
- For nonmedical human subjects research conducted on campus, the Office for Human Subjects Protections coordinates the Institutional Review Board (IRB), which must approve all protocols before research can proceed. For further information, see campusirb.duke.edu/campus-institutional-review-board.
- For faculty, students, and staff throughout Duke University (campus and medical center), ORS provides information on funding opportunities including specific funding information for graduate and professional students.
- For faculty, students, and staff throughout Duke University (campus and medical center), the Office of Export Controls provides assistance on travel to embargoed countries, transport of computers and other equipment overseas, and exports in general. For further information see export.duke.edu.
- Supported by the Office of Research Integrity (DORI), ORS offers extensive information on external funding for thesis and dissertation research, postdoctoral fellowships, travel awards, and other research and training support. Online resources include funding-opportunities databases and Duke's Funding Alert newsletter to which students may subscribe at researchfunding.duke.edu.
- Also through DORI, ORS offers regular workshops for graduate students on how to use its online funding information resources. For a schedule of upcoming workshops, please refer to ors.duke.edu/about-us/events. Students may also use online resources, such as PIVOT and the Foundation Directory Online, which are available via the ORS website. Before submitting a proposal, students will need to work with their home department and ORS for institutional review of their proposal, and also will need to begin the process of obtaining IRB approval for any human-subjects protocol that may be part of their research.

For all of these services, call ORS at (919) 684-3030.

Oak Ridge Associated Universities

Since 1946, students and faculty of Duke University have benefited from membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of more than one hundred doctoral-granting academic institutions and a contractor for the US Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU member universities share the common objective of advancing scientific research and education by creating mutually beneficial collaborative partnerships involving academe, government, and industry. ORAU's emphasis is on developing and promoting partnerships with national laboratories—in particular, Oak Ridge National Laboratory (ORNL).

For decades, ORAU has recruited students and recent graduates to pursue degrees and conduct research in disciplines of interest to federal agencies with science research missions. ORAU has helped direct the educational paths and research careers of more than 35,000 individuals through

- graduate fellowships;
- undergraduate scholarships;
- postgraduate internships;
- postdoctoral research appointments;
- faculty research programs; and
- other science education programs.

In addition, through its management of the Oak Ridge Institute for Science and Education (ORISE), ORAU strives to advance science education and research programs. ORISE creates opportunities for collaboration through partnerships with other DOE facilities, other federal agencies, the academic community, and industry.

Fundamental to ORISE's mission objectives are

- strengthening the nation's research and development enterprise through education and research participation programs;
- ensuring the readiness of the nation to respond to terrorist incidents and other emergencies; and
- protecting workers, the public, and the environment through research, outreach, and verification activities.

For more information about ORAU and its programs, contact Duke's ORAU counselor in the Office of Research Support at (919) 684-3030, or refer to ORAU's website at orau.org.

Library Services

Services Available to Graduate Students at Every Duke Library

The descriptions below are intended only as a general overview. Contact a library for more complete information about these and other services.

- **Checking Out Books and Journals.** Graduate students may borrow materials from any Duke library and return them to any campus library. Alternatively, they may also request that materials be delivered to any campus library they specify for convenient pick-up or return. The length of the circulation period for books and journals varies from library to library as do renewal policies.

- **Reserving Materials for Course Use.** Guidelines for reserving materials for class use as well as submission forms for books, e-reserves, and videos are available at library.duke.edu/course-support/course-reserves. These guidelines apply at Perkins Library, Lilly Library, and the Music Library. Contact the Divinity Library, the Goodson Law Library, the Medical Center Library, and the Ford Library at Fuqua to reserve materials at those libraries for your classes
- **Document Delivery.** The document delivery and interlibrary loan service, offered at each campus library, obtains books, microforms, dissertations, journal articles, reports, and other materials not available on campus.
- **Reference/Research Assistance.** Librarians at public service desks offer general and specialized assistance in the use of electronic and print sources and document retrieval. In addition to working with students and faculty at these desks, reference librarians also assist users via telephone, email, chat reference, and IM. Chat reference assistance and IM are accessible from the libraries' website at library.duke.edu/research/ask.
- **Instructional Services and Resources for Classes and Labs.** Librarians offer a range of services to instructors, including workshops, course-related websites, and subject guides. Details are available at library.duke.edu/research/citing/refworks.
- **Assistance with Copyright and Other Scholarly Communication Issues.** The library's ScholarWorks Center can advise graduate students on copyright issues, scholarly publishing, data management, building and managing digital research projects, research metrics, and more. For more information, contact scholarworks@duke.edu.

Science Laboratories

Biological Laboratories

Facilities for graduate study in the Department of Biology are located on West Campus, together with those of supporting departments (physics, chemistry, earth, and ocean sciences, and the basic medical sciences). Scientists in plant and animal biology with common interests are clustered in two buildings: the Biological Sciences Building, and the French Family Science Center. The two buildings are physically connected and maximal interaction occurs between the different groups in biology through seminars, shared instrumentation, and collaborative research projects. Special facilities include animal rooms, greenhouses, refrigerated and controlled environment rooms, access to the Shared Material Instrumentation Facility, and the Light Microscopy Core Facility (LMCF). The LMCF offers a wide range of confocal and conventional fluorescence microscopes and image analysis resources. As a centrally funded shared resource, the core's aim is to offer affordable and efficient access to standard and advanced imaging instrumentation for users of all levels of experience and from any discipline across the Duke University and the Duke Medical Center campuses. Extensive facilities for experimentation in environmental control of plant growth are available in the Phytotron adjacent to the greenhouses.

The herbarium contains approximately 800,000 specimens and includes notable collections of mosses, lichens, and vascular plants. Other assets for teaching and research are the Sarah P. Duke Gardens on West Campus; the eleven-acre experimental plot and field laboratory; the Duke Forest, composed of 7,050 acres of woodland adjacent to West Campus; the field station for the study of ecology; and the Nicholas School of the Environment's Marine Laboratory, an interdepartmental facility located on a small island on the coast at Beaufort, North Carolina, where twenty-two buildings and a small flotilla of ships and boats provide teaching and research facilities for resident graduate students and faculty as well as visiting individuals or groups.

Duke University, through the Department of Biology, is a member institution of the Organization for Tropical Studies, Inc., a consortium of universities with field station facilities in Costa Rica that provide opportunities for coursework and research in tropical science.

Highlands Biological Station

Duke University holds a contributing membership in the Highlands Biological Station at Highlands, North Carolina, on the southern edge of the Blue Ridge Mountains at an elevation of 4,118 feet. The station and the region offer an excellent opportunity for field studies and some laboratory work. A limited number of qualified students in biology may make arrangements to carry out research here. Scholarships for advanced study during the summer months and a grant-in-aid to cover research expenses are available through the station.

The Plant Teaching and Research Complex

Managed by Duke Biology, The Plant Teaching and Research Complex is the core support facility for researchers using plants in the instruction of students and in biological research programs for Duke University. It plays an important role in supporting the university's objective through research, teaching, and extension.

The Plant Teaching and Research Complex is composed of five separate facilities: the Phytotron, the Research Greenhouse, the Teaching Collection, the Field Station, and the Botany plot. These facilities are dedicated to Duke University researchers and instructors.

The Phytotron

The Phytotron houses sixty-seven growth chambers of varying sizes and six greenhouse units. Environmental factors controlled in these units include light, temperature, nutrients, carbon dioxide concentration, and humidity. Founded in 1968, the facility has a long and distinguished history of plant-controlled environment research, and is an important tool for global change research. It supports studies ranging from individual plant to whole ecosystem responses to changes in atmospheric carbon dioxide levels and/or temperatures. The facility boasts a dedicated staff with many years of experience in controlled environment research.

Research Greenhouse

The Research Greenhouse, built in 2004, is equipped with some of the latest technology in greenhouse-controlled space. The total facility spans 12,676 square feet. This space encompasses eight growing zones separated by airlocks, and a propagation room.

Teaching Collection

The Teaching Collections greenhouses were constructed in 2009, directly adjacent to the Research Greenhouses, and are considered one of Duke's hidden gems. This diverse reference display of plants is used for both research and teaching. The collection features more than 950 unique species from around 500 different genera from around the world, including aquatic, desert, tropical, temperate, rare, and endangered species. The primary function of the plant teaching collection is to serve undergraduate teaching at Duke University. Because of its uniqueness, this collection also serves as a resource for world-renowned botanists as well as local school groups. In addition, the collections protect species on the list of rare or threatened plants. Tours are available by appointment only.

Field Station

The biological Field Station, located adjacent to the Duke Lemur Center, is the primary location for in-ground plant research trials. Open to all faculty and students, this protected two acres is used by plant geneticists and ecologists throughout the growing season, April to October. Field space is protected by an 8-foot-high fence to ensure the safety of the research from foraging deer.

Botany Plot

The Botany Plot on Cameron Boulevard is an additional in-ground protected plant research space open to all labs for plant experiments.

Duke Forest

Since 1931, Duke Forest has served as Duke University's living laboratory and outdoor classroom. It occupies over 7,000 acres of land in Durham, Orange, and Alamance counties. The mission of the forest is to facilitate teaching and research across a broad range of topics, and the primary management objectives demonstrate excellence in natural resource stewardship and sustainable timber production. The forest also provides an opportunity for nature-based, passive recreation.

The forest lies near the eastern edge of the piedmont plateau and supports a cross-section of the woodlands found in the upper coastal plain and the lower piedmont of the Southeast. A variety of ecosystems, forest cover types, plant species, soils, topography, and past land-use conditions are represented within its boundaries. In terms of size, diversity, accessibility, and accumulated long-term data, Duke Forest is a resource for studies related to forest ecosystems and the environment that is unmatched by any other university.

Academic use of the Duke Forest ranges from class instruction to long-term research projects, including studies on vegetation composition, landscape ecology, remote sensing, invertebrate zoology, atmospheric science, and global climate change. Background information available for teaching and research includes features such as soils, topography, forest cover, and management records; much of this data is electronically available in a geographic information system (GIS) format. A bibliography of past and current studies in the Duke Forest is also available.

In addition to leading educational tours and field laboratory exercises, Duke Forest staff actively promote researching and teaching across new disciplines, technologies, and audiences. Staff are available to assist researchers in site establishment and management of projects in the Duke Forest, and to work with teachers in planning and implementing course projects, case studies, and homework assignments that use the Duke Forest.

All graduate students who wish to initiate research or lead class activities in Duke Forest should contact Director Sara Childs at sara.childs@duke.edu to discuss the project. Through a simple registration and approval process, students have the opportunity to use this invaluable resource to maximize their educational experience at Duke. Maps and gate keys ($10 deposit required) are available from the office. For more information, visit dukeforest.duke.edu.

Earth and Ocean Sciences Laboratories

Morphodynamics and Coastal Processes Simulation Lab. Dr. Brad Murray's lab includes Silicon Graphics and LINUX computers, as well as PCs, and access to a large number of processors in a computing cluster in Colorado. Along with students, postdocs, undergraduate assistants, and visiting scholars, Murray uses these machines chiefly for developing and running numerical models of Earth surface processes. Experiments with relatively simple models address the evolution and response to climate change of an array of environments, including sandy and rocky coastlines, nearshore seabeds, coastal marshes, surf zones, rivers, deltas, desert sand dunes, arid landscapes, and patterned arctic permafrost. Interactions between physical landscape forming processes and biological processes, including humans, take center stage in several of these efforts. Field observations play a key role in motivating and testing these theoretical investigations, and the lab includes equipment to facilitate observations, including a basic GPS unit, video collection and analysis hardware and software, and a high-powered PC for processing large remote sensing (e.g. LIDAR) data sets.

Electron Microprobe Laboratory. The electron microprobe lab, directed by Dr. Alan Boudreau, is used by the petrology and geochemistry groups at Duke and The University of North Carolina at Chapel Hill. As such, it is an indispensable basic tool in mineral analyses. The machine consists of a Cameca CAMEBAX (French manufacture) electron microprobe with four wavelength-dispersive spectrometers, an energy dispersive spectrometer and digital electron microbeam imaging system. It is automated with control through PC operating system. The lab is part of a Duke-UNC shared laboratory facilities agreement.

Geochemistry Laboratory. Dr. Paul Baker's lab has all facilities necessary for major and minor wet chemical analysis. Dr. Baker's lab also has field sampling equipment including seismic reflection profilers and a variety of coring equipment for undertaking marine and freshwater sediment and water column sampling.

Geochemistry Laboratories. Instruments and laboratory facilities overseen by Dr. Emily Klein include the following instruments and laboratory equipment for sample preparation. (1) ARL-Fisons Spectraspan seven direct current plasma (DCP) spectrometer, equipped with a twenty-four channel multi-element cassette for major- and high-abundance trace-element analysis for elements and high abundance trace elements (to ppm levels). (2) VG PlasmaQuad-3 inductively-coupled-plasma mass-spectrometer (ICP-MS) for bulk analysis of low abundance trace elements including rare earth elements, high field strength elements, and a wide range of other elements.

The Thermal Ionization Mass Spectrometer (TIMS) Lab (nicholas.duke.edu/tims). Dr. Avner Vengosh oversees this laboratory, housed in the Division of Earth and Ocean Sciences at the Nicholas School of Environment. The heart of the lab is a fully automated Thermo Scientific TRITON thermal ionization mass spectrometer (TIMS). The TRITON is a new thermal ionization mass spectrometer with the most precise and accurate isotope ratios for positive and negative ions (see at thermofisher.com/us/en/home). The instrument was installed in February 2008. Currently the lab has developed the analytical procedures for boron and strontium isotopes.

The Laboratory for Environmental Analysis of RadioNuclides (nicholas.duke.edu/learn). Dr. Avner Vengosh oversees this laboratory, which includes:

- Two scintillation alpha counters (made by Scientific Computer Instruments, West Columbia, South Carolina) for measuring low abundances of 224Ra and 223Ra activities (Moore and Arnold, 1996; Vinson et al., in press)
- Canberra high resolution Broad Energy germanium (BEGe) detector (BE5030) gamma spectrometry with 50 percent relative efficiency equipped with ultra low background hardware, an In Situ Object Counting System (ISOCS), mathematical calibration software, and Genie 2000 Multi-Input software. The instrument is currently calibrated for measurements of 226Ra, 228Ra, 210Pb, and 137Cs radionuclides.
- RAD7 Electronic Radon Monitor/Sniffer for accurate measurements of radon in air and water, made by Durridge Company Inc., MA, USA. The instrument is calibrated for measurement of 226Ra in Mn-fibers after three-weeks incubation.

Marine Biogeochemistry and Ecophysiology Laboratory. The main objective of Dr. Nicolas Cassar's lab is to constrain the mechanisms governing carbon cycling, ocean fertility, the biological pump, ocean/atmosphere gas fluxes and carbon acquisition mechanisms in marine phytoplankton. The laboratory hosts several analyzers used in the lab and on ships: two quadrupole mass spectrometers, a cavity ring-down laser absorption spectrometer, optodes and a transmissometer. Several other peripherals include: high vacuum lines, pumps (peristaltic, gear and piston) and valco valves. Chemostats (or continuous-growth cultures) are also being built. See sites.nicholas.duke.edu/cassar for further details.

Eco-hydrology and Bio-geomorphology Lab. Dr. Marani's laboratory will be equipped to address issues related to interacting geomorphological, hydrological, and biological processes, in tidal systems as well as in fluvial environments. The lab will include computing facilities to develop and run numerical models and to analyze remote sensing information. The lab will also include a water isotope analyzer, DGPS equipment and software, a VIS/NIR radiometer, an ADV system, a sonic anemometer, and sensors to characterize hydrologic states and fluxes (soil moisture probes as well as traditional rain gauges and weirs).

Forestry Sciences Laboratory

The Forestry Sciences Laboratory of the USDA Forest Service, Southern Research Station, is located in the Research Triangle Park near Durham. This research organization provides excellent opportunities to complement research conducted by students in the Nicholas School of the Environment. Specialized research projects in forest economics, carbon cycling, and productivity are currently underway at the laboratory. The staff of the laboratory is available for consultation and participation in seminars. Arrangements may be made for students to conduct certain aspects of their research at the laboratory.

Marine Laboratory

The Duke University Marine Laboratory (DUML) of the Nicholas School of the Environment is an educational and research campus located on Pivers Island in the Outer Banks of North Carolina. The DUML campus consists of research buildings, library, classrooms, teaching laboratories, dormitories, a dining hall, student center, administration, maintenance complex, marine operations facility, and research docks. DUML is adjacent to the historic seacoast town of Beaufort, North Carolina, with direct access to the Atlantic Ocean, Cape Lookout National Seashore, barrier islands, sand beaches, estuaries, wetlands, and coastal forests. The area provides an excellent opportunity for research, at the undergraduate, master's, and doctoral levels. Research spanning physical, biological, and social sciences is supported at DUML. There are approximately thirty master's and thirty resident doctoral students. For information concerning teaching and research space, contact: Associate Director, Duke University Marine Laboratory, 135 Duke Marine Lab Road, Beaufort, NC 28516-9721; (252) 504-7508; rebecca.s.smith@duke.edu.

Lemur Center

The Duke Lemur Center is located in Duke Forest about two miles from the main campus. It is the world's only facility devoted entirely to the care, conservation, and study of lemurs. The colony is composed of approximately 250 animals from more than fifteen named taxa. The lemurs, and their closest relatives, the lorises, are housed in spacious indoor and outdoor facilities. In the summer months in particular, numerous lemurs "free range" in large tracts of open area within Duke Forest, providing a unique opportunity for investigators and students to study lemur behavior in a semi-natural setting. The center also houses frozen cadavers, biological samples, and fossil primate collections for study. All collections are utilized by students and faculty from a wide variety of Duke departments, as well as by scholars from other national and international institutions. Graduate students wishing to conduct research at the

center should identify this interest to the director of graduate studies for the department to which they are applying. For information pertaining to the use of the Duke Lemur Center, graduate studies, or availability of research space, contact Dr. Erin Ehmke, erin.ehmke@duke.edu, Director of Research, Duke Lemur Center, 3705 Erwin Road, Durham, NC 27705.

Chemistry Laboratories

In 2007, the Department of Chemistry moved to the French Family Science Center, a state-of-the-art research facility donated by the Bill and Melinda Gates Foundation. This building houses not only the entire chemistry department, but also biological sciences, and a portion of the physics department and research labs. The building contains 275,000 square feet of total area, with additional research space in the Levine Science Research Center to accommodate chemistry at the biology interface. This well-equipped chemical laboratory provides conditions conducive to research in many areas of current interest. Major shared instruments, including those for nuclear magnetic resonance and mass spectrometry, are housed in the departmental instrumentation facility, along with optical and other instrumentation, including FTIR, UV/VIS, and fluorescence spectrometers. A wide array of more specialized instrumentation is available in the various research laboratories, from ultrafast laser systems to atomic force microscopes to automated solid-phase synthesizers. Other major facilities on campus include the Free Electron Laser Laboratory and the University NMR Center, which maintains several ultra high field NMR instruments. A broad range of instrumentation for biological and materials science applications is accessible in the medical center and Pratt School of Engineering, with additional facilities available at the neighboring universities and in Research Triangle Park, including those for x-ray diffraction and structure determination.

Computing facilities in chemistry include SGI and Redhat Linux workstations, Beowulf clusters, and clusters of PC's associated with the teaching laboratories. The department is linked to the university's high-speed fiber optic network and to the university's high- performance shared computing cluster. This building is primarily a research facility, and the majority of space is dedicated to research and teaching labs. In addition, the department has state-of-the-art computer/video projection systems in its lecture hall and conference rooms and wireless networking for incorporation of the latest computational research tools into the undergraduate chemistry curriculum.

Physics Laboratories

The physics building houses research and instruction in the departments of physics and mathematics. Additional space is provided in the adjacent buildings such as Triangle Nuclear Building (TUNL), French Family Science Center (FFSC), and the Duke Free Electron Laser Laboratory (FEL). Graduate students conducting research in these buildings often have their offices there.

About half of the physics space is devoted to research laboratories for the department's programs. Among the special equipment housed in the department are: 1 GeV linear accelerator; a high current electron storage ring driving an ultraviolet to soft X-ray Free Electron Laser (FEL) (this facility is used, among other things, to produce a high-intensity gamma-ray source known as the HIGS; a 20 MeV tandem Van de Graaff accelerator with polarized source and cryogenically cooled polarized targets. In addition, the department houses a number of tabletop laboratories with state-of-the-art equipment used in performing experiments in hard and soft condensed matter, biophysics, nonlinear and complex systems, and optics. Examples include ultrafast, high power, short wavelength, far-infrared and frequency-stabilized lasers, traps for ultra-cold atoms, high-speed oscilloscopes, classical and quantum optical telecommunication systems, entangled-photon sources, specially designed apparatus or soft matter experiments, conventional and ultra-high speed imaging equipment, cryostats for achieving milliKelvin temperatures, and associated equipment for fabricating experimental samples. In addition, a scanning electron microscope with electron beam lithographic capability and other materials processing equipment is housed in the Shared Materials Instrumentation Facility (SMIF). An appropriately staffed instrument shop is also located in the physics building.

The department contains several computers for data collection and processing in all of the research groups and a massively parallel computer system for use in particle, nuclear, and condensed matter experimental and theoretical research. Desktop computers are typically provided for all grad students. The computing infrastructure is maintained and supported by computing staff located in the physics building. The physics building is located near the Bostock Library, which contains a world-class collection of books and scholarly periodicals.

Engineering Research Laboratories

The laboratories of the four departments of the Pratt School of Engineering contain extensive state-of-the-art equipment that is used in several specialized fields. The Shared Materials Instrumentation Facility (SMIF) provides researchers with high quality and cost- effective access to advanced materials characterization and clean room fabrication capabilities. SMIF operates as a multidisciplinary shared use facility, and is available to Duke University researchers from various schools and departments as well as to external users from other universities, government laboratories, and industry. SMIF is housed in the Fitzpatrick Center for Interdisciplinary Engineering, Medicine, and Applied Sciences (CIEMAS). The 11,000-square-foot facility consists of 4,000 square feet of class 100 and class 1000 clean room space, and more than 2,600 square feet of specialized laboratory space for characterization equipment. The remainder of the space is composed of facility support areas, staff offices, and a conference/classroom.

Duke Research Computing offers a range of computing options, ranging from high-throughput/high-performance cluster computing to virtual machines. The Duke Compute Cluster consists of machines that the University has provided for community use and that researchers have purchased to conduct their research. At present, the cluster consists of about 7,000 CPU-cores, with underlying hardware from Cisco UCS and Dell M600-series blades in Dell M1000-series chassis. Interconnects are 10 GBs.

The following is an overview of research and capabilities found in each department:

Biomedical Engineering. This biomechanics and mechanobiology research focuses upon mechanics at and across the molecular, cellular, tissue, and organ levels with applications in orthopedics, injury mechanics, and biomaterial and tissue engineering design. Biomaterials research includes the molecular design of soft materials, nanomaterials, immune-active materials, scaffolds for tissue engineering, and basic investigations into the complex mechanisms by

which materials engage biology. The Duke BME program is a world leader in the development of novel biomedical imaging technologies, with translational and basic science applications. The program has pushed the boundaries of discovery and innovation in optics and photonics, ultrasound, MRI, X-ray, and nuclear medicine-based imaging technologies, developing new diagnostic and treatment tools for ailments ranging from cancer to cardiovascular, neurological, and ophthalmic diseases. Neural engineering research focuses upon developing novel neural technologies that can interact with the brain on a much finer scale and with greater coverage than previously possible, using both electrical and optical measurements. Research in biosensors and bioinstrumentation utilizes recent advances in biochemistry, electronics, omics (genomics, epigenetics, proteomics), and physiology to develop novel diagnostic, therapeutic, and prosthetic devices. The program engineers macro- and nano-scale devices that utilize biological components, such as antibodies or enzymes, to detect and quantify minute amounts of chemicals or investigate biological process in diverse systems and environments. The program is developing methods to read and manipulate genetic code, including new strategies for regenerative medicine, treatment of genetic disease, and techniques to establish robust gene circuit function. Researchers within the Duke BME community focus on the study and advancement of computational methods and data analysis techniques to understand biological phenomena. This research spans many application areas including electrophysiology, patient-specific hemodynamics, cellular mechanisms, gene circuits, and synthetic biology.

Civil and Environmental Engineering. Duke Civil and Environmental Engineering research focuses on the broad themes of creating healthy, safe environments and engineering complex earth, water, and built systems. Collaborating across disciplines and around the world, we apply engineering methods to solve global challenges posed by growing human needs and activities and uncertain environmental forces, with the goal of creating a healthier, safer, and more sustainable world. Duke computational mechanics faculty develop efficient, precise algorithms to study and solve complex problems governed by the laws of mechanics. We study the connections between human and environmental health to understand risks and build resilience in both living populations and global ecosystems. CEE researchers work to address issues related to underground engineering, exploration, resource use, and environmental hazards. CEE research efforts in Hydrology and Fluid Dynamics focus on pressing problems in environmental fluid dynamics, hydrology, and water resources. CEE researchers are finding new and better ways of estimating and quantifying the dynamics, uncertainty, and risks prevalent in engineered and natural systems.

Research and teaching facilities in engineering mechanics, structural engineering, and geomechanics include four independent closed-loop electrohydraulic dynamic loading systems (MTS), with a frequency range up to 100 Hz, and ranges of load to capacity 6,000, 35,000, 50,000, and 220,000 lbs. For teaching and research, the department has a 10,000 lb. universal testing machine and a 10,000 lb. torsion machine both fully instrumented with computer data storage, as well as a Kistler force plate with ten decades of sensitivity. Equipment is available for fabricating specimens and testing fiber-reinforced polymer composites. An environmental chamber tests in the temperature range of -100° to +350° F; equipment for spectral and modal dynamic analysis, and an ultra-high pressure triaxial shear apparatus is available for confining pressures up to 100,000 psi. Rock-testing facilities, model-testing equipment for anchored walls and penetrometer studies, a large-aperture research polariscope, a reflective photoelastic polariscope, and a sustained-loading facility for long duration in studies of prestressed concrete are routinely used in teaching and research procedures.

Research and teaching facilities in environmental engineering include wet and dry laboratories equipped to study a range of physical, chemical, and biological processes. A fully integrated resource recovery pilot plant, calorimetry for the measurement of heat values of secondary fuels, air classifiers interfaced with computer monitors, as well as indoor and outdoor water resources monitoring devices including flumes, Venturi meters, and digital computation hardware are available. The biotechnology and physical-chemical laboratories are equipped with autoclaves, a media preparation room, walk-in environmental rooms, numerous fume hoods, a biohazard containment facility for cultivation of genetically engineered microorganisms, fully instrumented bioreactors with online control, and various analytical instrumentation including liquid scintillation counting, autoradiography, atomic adsorption spectroscopy, total carbon analysis to ppb levels, gas chromatographs equipped with ECO, FID, and TCD detectors, HPLCs, computer-assisted image analysis microscopes, and a recently acquired Fourier transfer infrared spectrometer facility.

The Aquatic Research Facility, located in the Duke Forest, is comprised of approximately 1,500 square feet of AAALAC-approved space for holding and performing experiments with aquatic organisms. The facility contains static and flow-through systems for both holding and exposing fish and is approved for research with hazardous chemicals and for research with radiolabeled (H-3 and C-14) compounds. Conditions in 30 controlled release facilities—tightly controlled and highly instrumented ecosystems are continuously monitored and recorded through a sophisticated network of sensors that allow for real-time online data collection and analysis, available to CEINT researchers worldwide through a secure internet portal. The data logging (via a network of CR1000 and multiplexers Campbell) has been micro-coded and programmed for the acquisition of a large amount of probes and sensors implemented at the mesocosm site. Instrumentation available in the labs of Environmental Engineering researchers ranging from advanced multi-angle dynamic light scattering, ellipsometers, and electrokinetic and surface area analyzers for nanomaterial characterization to PCR, Real-Time PCR, DGGE, Gel-Doc, confocal scanning laser microscopes and IMARIS and COMSTAT software to analyze and quantify confocal microscope images, and related equipment for molecular microbiology work. Students and faculty also have substantial access to X-ray and synchrotron facilities at DOE labs including SSRL/SLAC, PAS/ANL, ALS/LBNL, and EMSL/PNNL and associated sample preparation instrumentation.

Electrical and Computer Engineering. The Computer Engineering (CE) group engages in design, implementation, evaluation, and testing of computer systems at all levels of a computer system, from computing substrates and materials to hardware architectures to the software that runs on the hardware. The computer engineering group collaborates closely with the computer systems group in the computer science department, particularly with researchers in architecture, distributed systems, networking, and databases. Microelectronics, photonics, and nanotechnology (MPN) research focuses on materials and devices that include micro- and nano-fluidic systems, integration of these fluidic systems with optical systems, photovoltaics, nano-optics, photodetectors, lasers and LEDs, optical biochemical sensors (fluidic and aerosol), silicon photonics, integrated circuit design through the MOSIS foundry, CMOS circuits, nanostructured materials and devices, and chip scale integrated optical/electrical systems. Strong software design and optimization capabilities in MPN are complemented by the fabrication and characterization capabilities in the SMIF, and through ultra-mixed signal test facilities in MPN labs. Duke

ECE has a strong experimental and theoretical research presence in novel and structured metamaterials, surface science, electromagnetic and acoustic waves, quantum sciences, imaging systems, and communication systems. Research in this area includes design and realization of functional advanced information processing systems; electromagnetic, wave, and quantum physics used for representation, transmission, and manipulation of information; mathematical and computational principles for encoding and processing of information. Signal and Information Processing and Robotics plays a key role at the intersection of fundamental science, domain knowledge, and theory and algorithms. Research involves robot motion planning and control, semiautonomous robots, and integrating perception and planning; design and analysis of cyber-physical systems, physics-based statistical signal processing algorithms, image and video processing, computer vision, computer graphics, and computational vision.

Mechanical Engineering and Materials Science. Duke Mechanical Engineering & Materials Science research is focused on solving some of the biggest challenges facing humanity and our planet. MEMS faculty have deep experience in developing methods of scientific computing and specialize in the application of computational approaches, including artificial intelligence, to a wide range of engineering challenges—from predictive modeling to new materials development to automation and controls. We design autonomous systems that span robotics, cyber-physical systems, internet of things, medicine, and the ethical and social impact of technology. Using computational and experimental methods, our researchers seek to discover new knowledge of the physics involved to aid in the development of improved airframes and turbomachinery that are safer and more efficient. Faculty are deeply engaged in developing new sources of energy and improving the design of systems for energy conversion, storage and transport. New energy materials and approaches include photovoltaics, solar fuels, thermoelectrics, supercapacitors/batteries, efficient lighting, and thermofluids. Practical applications are built upon discoveries in mechanics, thermodynamics, hydrodynamics, materials science, applied chemistry, and physics. MEMS faculty conduct research focused on computational discovery of new materials, the creation of materials on the nanoscale, nanoscale investigation of physical phenomena and properties of polymers, soft-wet, and nanomaterials, and exploring a deep and rich array of biological phenomena to unlock discoveries leading to new bio-inspired materials. Building on our discoveries, we are solving analytical and biomechanical problems with clinical relevance.

The department has well-equipped laboratories for studies in aerodynamics, acoustics, nonlinear dynamics and chaos, microscale and convective heat transfer, computational fluid mechanics and heat transfer, control theory, cell and membrane biomechanics, biorheology, polymer engineering, corrosion, electronic materials, physical metallurgy, positron annihilation spectroscopy, and expert systems. Equipment in these laboratories includes a wind tunnel, several scanning electron microscopes and scanning tunneling microscopes, Doppler broadening and lifetime positron systems, a liquid helium cryostat, DSC/DMA facilities and diffusion furnace, inverted microscopes, atomic force microscopes, low-light-level video cameras and a photon counter, cell-culture systems, an anechoic chamber, dynamic signal analyzers, and laser velocimeters for dynamic analysis, an x-ray generator and diffractometer, FTIR spectrometer, high-power lasers with lock-in amplifier, a 3D Systems ProX 350 metal 3D printer, and fluorescence microscopes. Duke's Soft Matter Lab contains instrumentation for synthesis of colloids and biopolymers and for characterization of their assemblies. These include the capacity for synthesis and purification of recombinant biopolymers, microfluidic production of colloids, and high throughput production of nanoparticles.

The Duke Hypo-Hyperbaric Center

The Duke Hypo-Hyperbaric Center is a major center for research, treatment, and training involving hyperbaric and hypobaric exposure and simulation. The facility includes the F. G. Hall Laboratory, a large multi-chamber complex, and supporting clinical and laboratory services. Hyperbaric oxygen is used in the treatment of many disorders, including decompression illness, gas gangrene, carbon monoxide poisoning, and wound healing. The hyperbaric facility is fully equipped with state-of-the-art hemodynamic and blood gas monitoring equipment, allowing uninterrupted delivery of critical care for patients requiring intermittent hyperbaric oxygen therapy.

As the major facility in the southeastern United States for the referral and treatment of serious diving accidents and air embolism cases and for patients with hypoxic and nonhealing conditions for which hyperbaric oxygen is used, the laboratory provides wide opportunities for scientific, clinical, and research training for graduate students, postdoctoral fellows, and physicians in high and low pressure-related medicine and physiology. The center faculty also consult on recreational diving illness for the National Diver's Alert Network (DAN) and Dive Assure. The program is interdisciplinary with major participation by the departments of anesthesiology, medicine, surgery, cell biology, neurobiology, and the Pratt School of Engineering.

The Medical Center

Currently, the medical center at Duke University occupies approximately 140 acres on West Campus. The southern quadrant is contiguous with the main quadrangle of the university and consists of the following: Duke Clinic, Davison Building, Baker House, Barnes Woodhall Building, Diagnostic and Treatment Building, Ewald W. Busse Building, Eugene A. Stead Building, Clinical Research II, Edwin A. Morris Clinical Cancer Research Building, and the new Duke Cancer Institute, which opened in February 2012.

The northern portion of the medical center campus includes the Joseph and Kathleen Bryan Research Building for Neurobiology; Nanaline H. Duke Medical Sciences Building; Alex H. Sands Medical Sciences Building; Edwin L. Jones Basic Cancer Research Building; Clinical and Research Laboratory Building; Joseph Levine Research Center; CIEMAS Building; Seeley G. Mudd Communications Center and Library; Mary Duke Biddle Trent Semans Center for Health Education, which opened in February 2013; Joseph A. C. Wadsworth Building (Eye Center); Albert Eye Research Institute (Eye Center); Hudson Building, which opened in June 2015 (Eye Center); Duke University Hospital and Anlyan Tower; and Lenox Baker Hospital. The new Duke Medicine Pavilion opened in July 2013.

In the eastern section of the medical center campus are the Pickens Rehabilitation Center, Civitan Mental Retardation and Child Development Center, Trent Drive Hall, Christine Siegler Pearson School of Nursing, and Duke Health Center for Interprofessional Education, which opens in August 2019. In the western section of the medical center campus are Surgical Oncology Research Building; Environmental Safety Building; Research Park Buildings I, II, III, and IV; the Vivarium; the Medical Science Research Buildings I, II, and III, which opened in October 2018; Genome Science Research Building; the Synderman Research Building; the Global Health Research Building; and the Cancer Center Isolation Facility.

Duke Learning Innovation & Lifetime Education

Duke Learning Innovation & Lifetime Education (LILE) is Duke University's central source for teaching and learning innovation on campus and through Duke's professional, continuing, and online education offerings. Our research-driven educational consulting and market-driven lifetime learning opportunities serve all learners, from pre-college to post-career. To learn more about LILE, visit learninginnovation.duke.edu.

Bass Digital Education Fellowship

LILE, in partnership with the Duke Graduate School, offers a semester-long fellowship program to provide PhD students professional development opportunities in the growing area of digital education and online college teaching.

The Bass Digital Education Fellowship offers PhD students an opportunity to collaborate on digital projects in partnership with Duke faculty and under the guidance of Learning Innovation to explore new technologies for learning, and to develop new online education models and programs.

The program helps graduate students develop new skills to distinguish themselves in the academic job market and to explore emerging career paths in education technology, digital publishing, online education, and teaching and learning innovation. Fellows will consult with Duke departments and/or individual faculty to uncover needs, research solutions, draft project proposals, and execute a digital project in support of undergraduate education. Fellows who complete the program will also partially fulfill the requirements for the Certificate in College Teaching. For more information about the Fellowship, visit learninginnovation.duke.edu/learning-networks-communities/bass-digital-education-fellows-1.

Duke Graduate Academy

The Duke Graduate Academy offers free online short courses that help emerging scholars prepare for high-level research, innovative teaching, leadership and/or public engagement. Duke University graduate and professional students and postdoctoral fellows can build skills, tools and knowledge to augment their regular coursework and research. Courses in the Duke Graduate Academy cover topics not typically included in a graduate curriculum, or they provide an intensive introduction for graduate students and postdocs who might not have the time or inclination to pursue a full course in a subject. Instructors are Duke faculty as well as highly trained Duke staff and Ph.D. students. Duke Graduate Academy courses are offered during Summer Sessions I and II. To learn more about this opportunity, visit learninginnovation.duke.edu/duke-graduate-academy/

Resources for Instructors & Teaching Assistants

- Teaching Guides: Great teaching is part art, part science. Complement your personal teaching approach with these teaching techniques proven effective through evidence-based research.
- Workshops & Events: Throughout the year, we offer teaching and learning workshops and events at Duke on topics like Sakai (soon to be replaced by Canvas), learning technologies, inclusive teaching practices, and course design.
- Learning Technologies: We curate and maintain an ecosystem of learning technologies for the Duke Community, and can consult on how to best use a tool in your course.
- Newsletter: Subscribe to our monthly newsletter to find out about upcoming events and the latest news in education.

General Academic Regulations

These regulations apply to all students in The Graduate School. Regulations specific to master's or PhD programs are detailed in subsequent sections.

Credits

The following regulations pertain to credits earned outside of The Graduate School:

Graduate Credit Earned Before the Bachelor's Degree Is Granted

Ordinarily, no credit will be allowed for graduate courses taken before a student has been awarded a baccalaureate degree from an accredited college or university. However, an exception is made specifically for Duke University undergraduates who have been admitted provisionally to an approved accelerated undergraduate/graduate master's degree program (such as a "4+1" program). Course credits for designated, pre-approved graduate-level courses taken prior to the conferral of the baccalaureate degree may be used toward the master's degree course requirement, per the specific program's agreement with The Graduate School and with Trinity or Pratt. The counting of such credits toward the master's degree must be approved in advance by the academic dean of The Graduate School.

Transfer of Graduate Credits

For master's programs, up to six units of graduate credit (two standard 3-hour courses) may be requested to be transferred toward the master's degree after at least twelve credit units have been completed in the student's Duke graduate degree program. Such credit must be graded, at a mark of B or better, and no more than six years old at the time of graduation from Duke. Transfer of graduate credit does not reduce the required minimum registration of thirty units for

a master's degree at Duke or the requirement of three or more full-time terms of registration. For PhD students, up to one semester of full-time tuition credit (but not course credit) may be given if the student has previously completed a relevant graduate degree. No transfer credits toward a master's degree will be awarded to those students who wish to receive a master's degree en route to the PhD, whether the master's degree is in the same or a different subject area. Financial credit for the above programs will be given only after the student has completed one full-time semester in a degree-granting graduate program. For PhD students, departments may consider previous coursework in determining further course requirements for the student. In any case, academic credit is distinct from financial credit or registration requirements for the PhD and master's degrees.

Grades and Academic Standing

Grades in The Graduate School are as follows: A, B, C, F, and I. One of these final grades must be assigned in all cases promptly upon the end of a graded course. An I (Incomplete) indicates that some portion of the student's work is lacking, for reasons such as illness or emergency absence, at the time the grades are reported. For students enrolled in The Graduate School, the instructor who gives an I for a course specifies, via a written agreement with the student, the date by which the student must make up the deficiency and a permanent grade recorded. If a course is not completed within one calendar year from the date the course ended, or the end of the student's graduation term, whichever comes first, the grade of I becomes permanent. In that event, it may not be removed from the student's record even if the work is subsequently completed. The grade of Z indicates satisfactory progress at the end of the first semester of a two-semester course. For non-degree graduate students enrolled in the summer session, a temporary I for a course may be assigned after the student has submitted a written request. If the request is approved by the instructor of the course, then the student must satisfactorily complete the work prior to the last day of classes of the subsequent summer term.

In order to be certified as making satisfactory progress toward the degree, and in order to receive their degrees, graduate students must maintain at least a 3.0 (B) cumulative grade point average. Students falling below this average, or who receive a C- or two C's in a given term, will be placed on academic probation. Except in extenuating circumstances, and at the discretion of the academic dean, a student who receives a grade of F must repeat the course in a subsequent term and receive a satisfactory grade (B or better), or face dismissal. A second grade of F in a major course occasions dismissal from a student's degree program.

Further criteria for academic standing are specific to the PhD or master's degree. To remain in good academic standing in a doctoral program, a student must also demonstrate satisfactory progress in research and related activities beyond coursework, as certified annually by the student's director of graduate studies. The graduate faculty in the doctoral student's program, including the advisor and program director, make the determination of progress to degree. For master's students to be making satisfactory progress to their intended degree, at least two-thirds of the credits attempted in any given term must be completed with a satisfactory grade (Credit in the case of Credit/No Credit courses, or a grade better than F for a graded course). Courses from which a student has withdrawn (W) or in which a student receives an incomplete (I) cannot count toward satisfactory completion. Degree programs may establish additional criteria that students must meet to remain in good academic standing.

Failure to attain good academic standing, for whatever reason, results in a probationary period of one semester. Students are notified by The Graduate School and/or their academic programs of their failure to attain good standing, with necessary corrective measures or standards to be met in order to return to good standing. Two consecutive semesters on academic probation will normally result in withdrawal from the university. The university reserves the right to require the withdrawal of any student whose academic performance at any time is not satisfactory to the university. Matriculation by the student is a concession to this right.

Reciprocal or Interinstitutional Agreements with In-State Universities

Under a plan of cooperation among Duke University, The University of North Carolina at Chapel Hill, North Carolina Central University, North Carolina State University, the University of North Carolina-Greensboro, and the University of North Carolina-Charlotte, full-time students properly enrolled in The Graduate School of Duke University during the regular academic year and paying full tuition to this institution, may be admitted to a maximum of two graduate-level courses per semester at one of the other institutions in the cooperative plan. Under the same arrangement, students in the neighboring institutions may be admitted to coursework at Duke University. Credit so earned is not defined as transfer credit. Such courses cannot be taken on an audit or Pass/Fail basis. Students may not enroll in distance education (remote) courses under the interinstitutional agreement. To take advantage of this arrangement during either summer session term, the student registers for three units of credit at the home institution and three units of credit at the other institution, for a total of six units. All inter-institutional registrations involving extra-fee courses or special fees required of all students will be made at the expense of the student and will not be considered a part of the Duke University tuition coverage. This reciprocal agreement does not apply to inter-university joint degree programs or contract programs such as the American Dance Festival.

Courses Primarily for Undergraduates

Courses below the 500 level are at the undergraduate level and may not be applied toward the required credits needed for a post-baccalaureate degree. With the approval of their director of graduate studies and the academic dean, graduate students may enroll in lower-level courses, but these courses will not count toward full-time enrollment or any graduation requirement, and will not be included in a student's GPA calculation. The grading basis for these courses is A*, *B**, C*, *F**. Students must withdraw from courses below the 500-level if they wish to discontinue them after the drop/add period ends.

Selected graduate-level courses are offered concurrently with their undergraduate-level counterparts. Graduate students enrolled in these courses are required to complete the requirements and meet the rigor delineated on the graduate-level syllabi, which must be distinct from—and more rigorous than—the requirements for undergraduate credit. For additional information, please contact the university registrar and/or the director of graduate studies.

Withdrawal from a Course

For permissible changes during the Drop/Add period of the fall or spring semester and during the first three days of summer session term, see the page on Registration Requirements. If a course is must be discontinued after the Drop/Add period during the fall or spring or after the first three days of classes during the summer, a Withdraw (W) will be noted on the permanent record. Course withdrawals are allowed up through the last day of graduate classes in any given term.

Interruption of Program and Withdrawal from The Graduate School

Students must meet academic requirements, as well as financial obligations specified elsewhere in this bulletin, in order to remain in good standing. Certain nonacademic rules and regulations must be observed also, such as the Duke Community Standard. Failure to meet these requirements may result in summary dismissal by the academic dean of The Graduate School.

A student who wishes for any reason to withdraw from their graduate degree program or from individual courses during the fall, spring, or summer session must notify in writing both the DGS in the major department and the graduate academic dean prior to the date of the expected withdrawal and no later than the published last day of graduate classes for that semester or summer session. International students on visas should be aware that withdrawal has immediate implications for their legal status in the United States and should contact Duke Visa Services for guidance. If students wish to withdraw from courses in the summer session, they must consult both the director of graduate studies in the major department and the Graduate School Registrar. To learn about the policies on tuition refunds upon withdrawal, see the chapter “Financial Information.”

After completion of at least one semester of graduate study in good academic standing, a student who chooses to withdraw before completion of a graduate program may, with the approval of the major department, request the dean to issue a certificate of graduate study.

Students who have voluntarily withdrawn must seek reinstatement before they can be enrolled again. To be considered for reinstatement, a student must send a letter to the DGS for potential endorsement before it is forwarded to the academic dean of The Graduate School for consideration. The student must pay a reinstatement fee as well as continuation tuition for all fall and spring semesters that transpired since their discontinuation term. Previously completed coursework or examinations that are more than six years old will not count toward degree requirements.

Leave of Absence and Time Away

Enrolled graduate students must meet the academic schedules of the semesters in which they are actively enrolled, unless on approved leave of absence or time away. A leave of absence for a given semester may be granted because of medical conditions, full-time employment relevant to completing the degree, receipt of an external research award, or other acceptable reasons as judged by the academic dean of The Graduate School. A request for a leave of absence should be originated by the student, endorsed by the student’s DGS, and submitted to the academic dean for consideration prior to the beginning of the semester for which the leave is requested. Students are eligible to request a leave of absence only if they are in good academic standing and have completed at least one semester in the current graduate degree program at Duke. No more than two semesters of leave, in total, may be granted throughout a student’s degree program. Requests for medical leaves of absence must be supported by a letter to the academic dean from a treating medical practitioner, indicating the necessity of the leave for medical reasons. Return from such leave must be similarly supported by evidence, such as a letter from a current treating practitioner, that the student is ready to return to the rigors of graduate study. If an emergency medical leave must be taken once a semester has begun, it would be retroactive to the start of the term. Formal leaves of absence are not applicable to the summer term, but summer experiential leave may be requested by PhD students who otherwise would be registered. Students who would otherwise receive stipends do not receive them while on leave. Tuition is not charged for terms in which a student is on leave.

Whereas leaves of absence are for an entire semester, PhD students may seek a childbirth or adoption accommodation of several weeks, as described on The Graduate School’s website. Students in compensated assistantship positions (research assistants, teaching assistants, and graduate assistants) for a given term may take up to a designated number of paid vacation days during that term, in addition to university holidays. The Graduate School’s vacation policy is detailed on its website.

Time limitations that pertain to the various degrees and requirements, and the completion of courses on which a grade of Incomplete (I) was earned, are not waived during leaves of absence, other than those of medical necessity and as approved by the graduate academic dean.

Students contemplating leaves of absence should be aware that, for financial purposes, all guarantees of financial support are calculated from the date of initial matriculation. For example, if a graduate program has stated that a student will be supported through the fifth year of graduate study, and the student subsequently takes a personal leave of absence for one of those years, the student would forfeit a year of institutional support. Departments will provide deferral of funding to a subsequent term in the case of medical leaves of absence. Foreign students on visas should consult Duke Visa Services for the implications of a leave of absence on their legal status in this country.

English Proficiency for International Students

All international students whose first language is not English must enroll in appropriate sections of English for International Students (EIS) during their initial year at Duke, unless formally waived from this requirement by The Graduate School upon certification of competency in English. The determination and assignment of the necessary course sections are made by the EIS staff based on placement test results and prior degree institution. The lower level EIS courses must be taken in the first year; in any case, all required courses should be taken as early as possible in the student’s course of study at Duke. Completion of all EIS courses into which a student places is a requirement for graduation. International MS and PhD students in the Pratt School of Engineering are subject to the same requirements, but the placement testing and course instruction will be provided directly by Pratt. Duke Kunshan University (DKU) MS degree candidates are also subject to these requirements and will receive training in English proficiency at the DKU campus.

Library Privileges

Graduate students have full library privileges and are entitled to carrels only if registered as full-time students. Only PhD students who have attained candidacy (passed the preliminary examination) are eligible for closed carrels.

Student Health and Insurance

The Student Health Fee covers most of the services offered at Duke Student Health if medically indicated and rendered by a Student Health Provider. The health fee should not be confused with the supplementary Duke Student Medical Insurance Plan (SMIP), which covers a large number of medical costs above and beyond the treatment available through the University Student Health Program. Full-time students who are entitled to coverage by the student health program are also eligible for the supplementary insurance policy.

All students enrolled in programs that require payment of the health fee must also have adequate medical insurance. The university requires all students to be responsible for health costs over and above what is covered by the student health fee. Students will automatically be enrolled in the Duke SMIP unless they submit a waiver request indicating that they have adequate coverage through a comparable plan. Students indicate their health insurance decision through DukeHub as part of the online registration process. For international students holding J-1 or F-1 visas, participation in the Duke SMIP is mandatory.

Registration Requirements

Continuous Registration for Fall and Spring Semesters

All students must register each fall and spring semester and pay the requisite tuition and fees for each semester until all degree requirements are completed, including graduation. Failure to maintain continuous registration each fall and spring semester will result in administrative withdrawal from the university after the semester course drop/add deadline. In addition, all PhD students within years of full funding must also register for continuation (CTN) in summer, unless on summer experiential leave.

The only exception to the continuous registration requirement is an approved leave of absence granted by The Graduate School's associate dean of academic affairs. After successful completion of at least one full-time semester, students in good academic standing may apply for leave of absence, if a semester away from academic duties is needed. If granted, leave is for the full semester only, with a maximum total leave of two semesters. Those who have been on a leave of absence and who intend to resume a degree program must give the department and the academic dean notice of this intention one month before the first day of the semester of their return. A request for a medical leave of absence must be supported by a letter stating the necessity for leave from the student's current treating medical practitioner. A similar letter is required for a student to return to the rigors of graduate education from a medical leave of absence. With the approval of their academic advisor, doctoral students within years of funding may apply for summer experiential leave, as an alternative to summer enrollment, to pursue professional and career development opportunities outside the university. Such leave does not count toward the two-semester limit of formal leave of absence.

Doctoral Students

All doctoral students must register for a total of six semesters of full tuition. After the six semesters of full tuition, doctoral students will be charged reduced tuition. Those PhD students with an earned graduate degree may petition to reduce the number of semesters of full tuition required for the degree to five semesters.

Specific course requirements for doctoral students are set by the degree-granting programs and departments. Doctoral students may enroll in up to fifteen credit units per term and should seek permission from their director of graduate studies (DGS) for any additional credits. Students must be registered during the terms when they take qualifying, preliminary, and final examinations; when they submit final dissertations to ProQuest for archiving; and when they graduate. These milestone examinations may occur during breaks between terms for students registered in the term immediately before and immediately after the break, with the milestone counting in the term following the break. Once a doctoral student has finished coursework, registration in continuation (CTN) is sufficient to maintain full-time enrollment status.

Master's Students

Full-time master's candidates must register for at least three semesters of enrollment, at a full load of at least nine credit units per term, until a minimum of thirty units of degree credit have been achieved. Some master's programs require more than thirty credits to obtain the degree. Students in full-time master's programs may enroll for fewer than nine credits only during the final semester, when they are completing the required degree credits or examinations in their program. Part-time master's candidates are charged tuition on a per-credit basis. An academic load of more than fifteen credits in a given term must be approved by the student's DGS. Approved transfer coursework of up to six credits into a master's program will not reduce the minimum registration of thirty units for a master's degree at Duke University. Students must be registered during the terms when they take final master's examinations, submit their theses, and graduate. The master's examination may occur between terms if the student is registered for both the term before and after the break when the exam occurs, but the examination milestone would count in the term after the break.

Registration Periods

All students who are enrolled in The Graduate School and who have not been granted a current leave of absence by the academic dean must register each fall and spring until all degree requirements are completed. New students will register immediately prior to the first day of classes in either term; continuing students register during the announced registration periods (set by the Office of the University Registrar) in November and April.

In the fall and spring semesters, all continuing PhD students are registered automatically for continuation (CTN), unless there are registration blocks on their accounts, such as those resulting from unpaid bursar balances. Students must take necessary action to resolve registration blocks, wait for the blocks to be removed from their accounts in DukeHub, and then manually register for continuation or courses as appropriate.

Repeating Courses

Graduate students may repeat enrollment for certain types of courses, including colloquia, journal clubs, or internship practicums. All instances of the course will appear on the transcript. Students may not repeat content-area courses for graded credit to count more than once toward degree credit requirements.

Auditing Courses

Any PhD or master's degree candidate enrolled full-time may audit graduate and undergraduate courses without charge during the fall and spring semesters, if this is acceptable to the faculty teaching these courses. Students should obtain faculty permission prior to registering to audit the class. If the student is not a graduate degree student, an audit fee is charged. There is a fee associated with auditing courses during the summer session, as well as for master's students' auditing courses in any part-time term.

Withdrawal

Graduate students may withdraw from courses up to the last day of graduate classes by filing a course withdrawal request signed by the student, instructor, and DGS. For courses taken for credit, this will result in a W notation on their transcript for that course; for an audited course, the notation is WA. Tuition is not refunded for students who withdraw from a course.

Students who wish to withdraw from their programs must notify the academic dean of their intent in writing. In the case of involuntary program withdrawal, the academic dean will notify the student. Students who are withdrawn from The Graduate School, whether voluntarily or involuntarily, during a term in which they are registered will be charged pro-rated tuition for the term that depends on the number of weeks that had transpired before the withdrawal notice.

Summer Registration

Graduate students may be registered for summer to conduct research or to take courses. PhD students who are conducting research related to their degree and/or are receiving support through university funds during the summer terms, but are not enrolled in any courses, must be registered for summer but are charged a reduced continuation tuition. Doctoral students within years of funding will be registered automatically for continuation (CTN) in summer. Other summer session students should register at announced times beginning with the February registration period and up to the Wednesday preceding the start of the appropriate summer term.

Students who plan to enroll in courses in the summer session should have their course programs approved by their DGS. There may be tuition charges associated with taking summer courses. Summer session students may add a course or courses before or during the first three days of the term. Courses may also be dropped before and during the first three days, but a 20 percent tuition fee will be charged (1) if the course is not dropped before the first day, and (2) the dropped course(s) results in a total tuition reduction. Courses dropped after the third day of classes are not eligible for a tuition refund.

Students wishing to enroll in summer courses intended for undergraduates must submit the request to enroll in a course below 500-level form to the graduate school registrar for approval. Additional tuition will be assessed for all undergraduate-level summer courses. Doctoral students registered for summer may request a tuition waiver if the undergraduate-level course is deemed essential toward the student's program of study by the DGS.

Master's Degree Regulations

Master of Arts/Master of Science

Prerequisites

For graduate study in master's degree programs, applicants must have completed a baccalaureate degree program at an accredited institution and have met the academic prerequisites and other admissions criteria of the program. Students should read carefully the special requirements listed by their major departments. If special master's requirements are not specified, and there is a question about prerequisites, prospective students should write directly to the appropriate director of graduate studies.

Language Requirements

The Graduate School requires no foreign language for the master's degree. Certain departments, however, do have language requirements, and these must be satisfied before the final master's examination can be taken.

All master's theses must be written in English. The only exception is that short passages and quotations may be written in another language in the research chapter(s) if deemed appropriate by a student's thesis examination committee.

Major and Related Subjects

Thirty course credits at Duke is the minimum necessary for the completion of most master of arts and master of science degrees. Students must present acceptable grades for a minimum of 24 course credits of graded coursework, at least twelve of which must be in the major subject. Master's students must complete additional coursework up to at least 30 credits, as well as required Responsible Conduct of Research training. Some master's programs require additional course credits beyond the minimum of at least 24 graded and 30 overall course credits, as approved by The Graduate School. Individual programs and departments decide whether any given MA, MS, or MFA program of study may be completed by submission of an approved thesis or by other academic exercises in lieu of the thesis, as previously approved for a specific degree program by the program's faculty and The Graduate School. In either case, a maximum of 6 course credits may be earned by the completion exercises (such as thesis research) and the final examination.

Thesis Requirements

The master's thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on a research problem. The thesis must be written by the degree candidate in an acceptable style for the disciplinary field and should exhibit the student's competence in scholarly procedures. Contribution to the writing by any other sources, whether other researchers, artificial intelligence, or any other means, must be fully disclosed at the start of the chapter in which such writing occurs. Requirements of form for the thesis are set forth in the Duke University "Guide for Electronic Submission of Thesis and Dissertations," which is available on The Graduate School Theses and Dissertations website. The thesis advisor must examine and approve the master's thesis prior to submission to The Graduate School, as indicated by a letter stating this approval.

The thesis must be submitted electronically in an approved form to ProQuest at least two weeks prior to defense (see deadlines for submission and defense posted on The Graduate School Graduation Deadlines website). Electronic copies of the thesis will be distributed by the student at least two weeks before the final examination to the approved members of the examining committee. Deadlines for submission are posted on The Graduate School website and must be respected if the student wishes to receive the degree in the semester when the intention to graduate has been declared. If a student misses deadlines for completion of all requirements during a term, including submission of an approved and correctly formatted thesis document, then the student must register and pay for a subsequent term in which the degree will be awarded. All master's theses must be submitted electronically to ProQuest, where they are openly and publicly accessible online after any approved embargo period. They also will be available in DukeSpace, the university's digital repository, after any embargo. See The Graduate School Theses and Dissertations website for information about electronic submission and procedures for obtaining copyright.

The Master's Examining Committee and the Examination

In consultation with a student and their major advisor, the program or department's director of graduate studies recommends an examining committee composed of at least three members of the Duke Graduate Faculty. Membership for service on a student milestone committee requires a degree that is at least the same level for which the student is a degree candidate (e.g., a master's degree for a master's committee). Any request for an exception by the academic dean must be based on the research expertise and the necessity of adding another member without such a degree. A majority of the committee, including the chair, must be a faculty member of the degree-sponsoring department or program, or, in the case of interdisciplinary programs, a university faculty member who has been designated specifically as faculty in the program. Another member (the minor area representative, MAR) must be from a research or scholarly area that is relevant to, but distinct from, the topic of the student's research. Normally only full Graduate Faculty members may chair master's examination committees unless a term member has received explicit approval from the academic dean of The Graduate School for this role. The committee and its chair must be approved by the academic dean of The Graduate School at least thirty days before the student takes the final examination. Students must be registered in the term during which they take the final examination. However, the examination may also occur during breaks between terms if the student is registered for the term before and after the break.

Master's examinations take several forms within The Graduate School, with all requiring a live, synchronous meeting between the candidate and the committee, at which the candidate is evaluated for the degree. The thesis examination is an oral defense of the written thesis that has been read and evaluated by the student's examining committee. The most common non-thesis examinations are written or oral exams on a prescribed reading list or body of material; oral exams on a paper or a set of papers submitted by the student; or an oral exam on a research project or memorandum. The doctoral preliminary examination may also serve as the final examination for the master's degree when it is in the same field and department, with the approval of the examining committee and DGS.

The master's committee will conduct the examination and certify the student's success or failure by signing The Graduate School's master's examination certificate. Each member of the approved committee must participate in the examination and must vote as to whether the student passed or failed the exam. Remote participation in the examination is permitted via videoconferencing tools such as Zoom, provided that the student and all committee members participate synchronously and interactively in the examination throughout the entire scheduled examination period.

Successful completion of the master's examination requires at least three affirmative votes and no more than one negative vote. The committee may vote to extend to the student the privilege of taking the examination a second time, in a subsequent term, in case of failure. The action of the committee to pass or fail the student is confirmed by the DGS, who also must sign the exam certificate, which must then be submitted to The Graduate School. If the student passes the examination, the signed certificate indicates completion of the final examination and program requirements for the degree. Any required changes to a master's thesis must be incorporated in the correct format and the final document successfully uploaded to ProQuest before the relevant deadline.

Additional Master's Regulations

Applying to Graduate

On or before February 1 for a May degree, June 1 for a September degree, and October 1 for a December degree, students must apply for graduation electronically by going to their student record in DukeHub. The declaration of intention to graduate presents the title of the thesis or specifies the approved alternative academic exercise on which the degree candidate will be examined. A separate application to graduate must be submitted for each degree or certificate a student intends to earn. The application is not valid for more than one semester. Students who will not meet degree requirements in the semester for which they have applied to graduate must contact the Graduate School registrar to cancel the current application so that they can be activated for registration and be granted access to submit a new application in DukeHub for completion of any degree or certificate in a subsequent term.

Transfer of Credits to the Master's Academic Record

A maximum of two graduate courses or six graduate course credits may be transferred for graduate courses completed at other schools after the bachelor's degree has been conferred. For Duke University undergraduates who are matriculated into an approved accelerated baccalaureate/master's program, certain graduate level courses taken before the baccalaureate degree conferral may be transferred. In all cases, such credits will be transferred only if the student has received a grade of B (or its equivalent) or better. The transfer of graduate credit does not reduce the required minimum registration of 30 course credits for a master's degree at Duke, even though it may relieve the student of specific courses otherwise required by the major department. Requests for transfer should be submitted on the approved graduate school form. For courses to count toward degree requirements, they must be no older than six years at the time of graduation from the Duke master's program in which the student is a degree candidate.

Individuals who are not Duke degree candidates but aspire to join a master's degree program may apply for non-degree status to take courses at the graduate level outside the context of a degree program. They nonetheless must apply for admission as a non-degree student via the standard admission application (see webpage on Admissions).

Credit for graduate courses taken at Duke by a post-baccalaureate student before formal degree admission to The Graduate School or while registered as a non-degree student through Duke Continuing Studies or The Graduate School may be carried over into a graduate degree program if (1) the action is recommended by the student's DGS and approved by the academic dean, (2) the amount of such credit does not exceed 12 course credits, (3) the work has received grades of B or better, (4) the work is not more than two years old, and (5) the student applies for and is granted formal admission into a degree program.

Time Limits for Completion of Master's Degrees

Master's degree candidates who are in residence for consecutive academic years normally complete all requirements for the degree within two calendar years from the date of their first registration in The Graduate School. Candidates enrolled in full-time programs of study must complete all requirements within four calendar years of their first registration. Part-time students must complete all requirements within six calendar years of their first registration. Courses older than six years cannot count toward the fulfillment of degree requirements.

To be awarded a degree in May, the recording of transfer credit must be completed by the first day of the final examination period. If a thesis is one of the requirements, it must be submitted to The Graduate School by the deadline posted on The Graduate School website. Candidates desiring to have their degrees conferred in September must have completed all requirements, including the recording of transfer of credit, by the last weekday of the Duke University summer session. Candidates completing degree requirements after that date and during the fall will have their degrees conferred in December.

Training in Academic and Research Integrity

Incoming master's students enrolled in all degree programs of The Graduate School must complete a training course in academic integrity and Responsible Conduct of Research (RCR). This will consist of an orientation provided by The Graduate School at the start of their first academic year, and an additional two-hour RCR forum later in their studies. Completion of this training is a requirement for graduation. Duke Kunshan University master of science candidates also must meet this graduation requirement, though their training is customized and offered for them at the Kunshan campus.

Master's Degree en Route to a PhD

Doctoral students in Duke PhD programs may obtain one master's degree en route to the PhD without additional tuition charges beyond those of the PhD. This master's degree may be in the same department, if the department permits this, or may be in a different department, if that department offers concurrent master's degrees and the request is approved by the DGS of the second department and the academic dean of The Graduate School. In either case, the student must complete all requirements for the relevant master's degree. A master's degree in a different department or field en route to the PhD will be awarded only concomitant with the PhD. If, for whatever reason, the student does not complete the PhD, and would like to receive the master's degree nonetheless, master's tuition will be charged for the terms during which the master's degree was pursued. Tuition and any other balances due must be paid to receive the master's degree.

Doctoral Degree Regulations

Requirements

The formal requirements for the PhD are as follows: (1) payment of six semesters of full-time tuition (or five if credit for a previous graduate degree has been approved), (2) major and related courses as determined by the degree program, (3) the fulfillment of foreign language(s) requirements in certain departments, (4) required training in the Responsible Conduct of Research and any English language proficiency courses into which the student has placed,

(5) a dissertation advisor and supervisory committee for the student's program of study, (6) residence of at least one year, (7) passing the preliminary examination, (8) completing the dissertation, (9) passing the dissertation examination, and (10) final submission of the approved dissertation to ProQuest for eventual public access through ProQuest and DukeSpace. All dissertations become publicly available through these platforms after any approved embargo period, up to a maximum of five years.

Major and Related Work

The student's plan of study normally demands substantial concentration on courses in the major degree program, plus coursework in related minor fields as determined by individual programs. The programs may specify courses that are required for the degree in that particular program. If there are deficiencies in a student's prior preparation, degree programs may also require certain prerequisite or foundational courses to be taken. In all cases, the student's DGS, in consultation with the student's advisory committee, will determine if the student must meet requirements above the minimum.

Foreign Languages

The Graduate School has no foreign language requirement for the PhD, but individual departments may have such requirements. For specific departmental language requirements, see individual program pages in this bulletin or contact the appropriate DGS.

The Graduate School requires that all dissertations and theses be written in English. The sole exception is when there are compelling scholarly or professional reasons to write the research portions of a doctoral dissertation in another language if that language is recognized by the student's examination committee as the primary language of the student's research within a foreign language studies PhD program in which the student is a degree candidate. To write a dissertation in a language other than English, the student must submit a request for an exception at the time the prospectus is submitted. The request must be approved by the student's examination committee and by The Graduate School's academic dean. If granted an exception, the student may write the dissertation's research chapters, introduction, and conclusion in another language. In all cases, the title, abstract, copyright notice, committee signature pages, and table of contents of dissertations must be written in English.

Responsible Conduct of Research

All PhD students at Duke University are required to complete a series of training sessions in the Responsible Conduct of Research (RCR). These sessions consist of two components: the first is an RCR orientation provided at the beginning of each academic year for all new incoming students. All students in the biomedical sciences will attend a general introductory workshop provided by the School of Medicine; students in the humanities and social sciences will attend a similar introductory workshop provided by The Graduate School, as will students in non-medical biological sciences, physical sciences, and engineering programs. All PhD students will subsequently attend a mandatory minimum number of RCR forums or other approved training experiences (including workshops and courses) scheduled throughout the academic year on individual topics related to RCR. The number and content, as well as the semester's schedule of such forums, courses, or workshops, will be published at the beginning of each semester on The Graduate School website.

Milestone Examination Committee

The obligatory milestone examinations for PhD students are the preliminary and dissertation examinations, which are oral, real-time interactive examinations based on written documents. Membership for service on a student milestone committee requires a degree that is at least the same level for which the student is a degree candidate (e.g., a doctoral degree for a doctoral committee). Any request for an exception by the graduate academic dean must be based on the research expertise and the necessity of adding another member without such a degree. The requirements for the composition of the committee are the same, regardless of the examination, though its members may change over time. This committee also typically serves as an advisory committee to the student during their studies and should be appointed to reflect research expertise that helps guide and evaluate the student's research project.

As early in a student's course of study as is practicable, and not later than one month (thirty days) before the preliminary examination, the DGS in the degree program will nominate for the approval of the academic dean a milestone committee consisting of at least four members of the Graduate Faculty, with one member designated as chair. The chair must be a full member of the Graduate Faculty and hold a faculty appointment in the degree-sponsoring program. Individual programs may specify whether the chair can or cannot be the primary research advisor. In all cases, this committee must include at least three Graduate Faculty members from the major field of study, and at least one from a minor area (the minor area representative, MAR), being from outside the degree program or from a clearly differentiated subfield within the degree program. At least two members of the committee, including the chair, must be faculty in the degree-sponsoring department or program. A majority of the committee must be Duke University faculty members, except in the case of joint PhD programs with other universities. This committee, with all members participating, will determine a program of study and administer the preliminary examination. The student's milestone committee, either the same or with some or all members replaced as needed, will also examine the dissertation and administer the final examination. All committee members must participate synchronously and in full for any examination to be valid.

Progress toward Degree

Beginning with their second year of study, all PhD students must file an annual progress report, prepared in consultation with their primary research or dissertation advisor, to their DGS summarizing their progress toward the degree. For students who have passed the preliminary examination and are working on their dissertations, this progress summary is also to be given to their doctoral committees, who will evaluate the student's status. Departments determine whether the progress report is a written report only or also requires a live presentation to the doctoral committee. The DGS in turn prepares an annual summary report on all the program's students for the graduate academic dean's review, reporting any student who has failed to demonstrate satisfactory progress. Failure on the part of a student to submit an annual progress report will preclude The Graduate School's ability to certify satisfactory

progress toward the degree and thus will jeopardize both the student's academic standing and eligibility for continued financial support. For federal financial aid eligibility, doctoral students must complete at least two-thirds of the course credits they attempt in any given term. Satisfactory progress is determined by the program faculty and the academic dean. Students who fail to make satisfactory progress will be advised of corrective measures and required timetables. Continued failure to make satisfactory progress results in dismissal.

Residence

The minimum residence requirement is one academic year of full-time physical presence at Duke's campus in Durham, concurrent with one year of continuous registration in The Graduate School (that is, two consecutive semesters of full-time tuition). The only exceptions to this are for joint degree programs with other universities, for which residency requirements will be made known to each such program's students.

Time Limits

A student registered for full-time study must pass the preliminary examination by the end of the third academic year, unless their program has an earlier preliminary examination deadline. Permission to delay the examination past the Graduate School's deadline must be granted by the academic dean. Endorsed requests for a delay must be made by the DGS in the major department, explaining the justification for the delay and setting a specific date for the examination in the following term of registration. Except under highly unusual circumstances (e.g., severe illness), extensions will not be granted beyond the middle of the fourth year. Note that leaves of absence do not delay this timetable. Students who have not passed their preliminary examination by the deadline, whether original or extended, will be withdrawn. The preliminary examination milestone expires after five years and may not be renewed.

Credit is not allowed for graduate courses (including transfers) or foreign language examinations that are more than six years old. In cases of exceptional merit, however, the academic dean may extend a specific time limit. Should this limit be exceeded, the student's department must submit to the academic dean specific requirements for revalidating credits or examinations.

The dissertation is expected to have been submitted, examined, and accepted within four calendar years after the preliminary examination, or seven years after entry to the PhD program. In the event that this timeline is not met, the candidate may, with the approval of the advisory committee and the DGS, petition the academic dean for an extension of up to one year. If this extension is granted and the dissertation is not submitted and successfully examined by the new deadline, the student will be withdrawn from candidacy. Credit will not be allowed for a preliminary examination that is more than five years old at the date of the final examination. Only in extraordinary cases, such as severe and prolonged illness or military deployment, will the academic dean consider any extension to this maximum timetable of eight years.

Preliminary Examination

A student becomes a candidate for the PhD when the preliminary examination has been passed. The examination ordinarily covers both the major field and related work, although some degree programs cover such field expertise in a separate qualifying examination. Please consult the program page in this bulletin or the degree program website for individual department or program procedures. The preliminary examination must be scheduled, with an approved committee, at least thirty days in advance. Students must be registered in the term during which they take the preliminary examination. The examination may occur during the break between terms if the student is registered for the terms before and after the break. The preliminary examination may be in person or via remote videoconference, and all members must participate synchronously and interactively for the entire duration of the examination.

Successful passing of the preliminary examination requires at least four affirmative votes and no more than one negative vote. A student who fails the preliminary examination may apply, with the unanimous consent of the examination committee and the DGS, for the privilege of a second examination to be taken between three and six months after the date of the first. Successful completion of the second examination requires the affirmative vote of all original committee members. Failure on the second examination makes a student ineligible to continue a program for the PhD at Duke University.

The qualifying and/or preliminary examination may also be used as the completion exercise for awarding a master's degree for a terminal master's or, where appropriate, for awarding a master's degree en route to the PhD.

The Dissertation

The dissertation is expected to be a mature and competent piece of the student's writing, embodying the results of significant and original research conducted under the supervision of a dissertation advisor in the student's major field. The dissertation must include a scholarly introduction that sets the context and importance of the research questions addressed in the study, separate chapter(s) presenting the research itself, and a final overview chapter summarizing the findings, conclusions, and significance of the dissertation project. Though the writing is expected to be the student's own, many dissertation projects involve collaborative work; the contributions made by other researchers or sources must be identified fully and specifically for each chapter in a preface to the relevant chapter. One month before the dissertation is presented and no later than February 1 for a May commencement, June 1 for a September degree, and October 1 for a December degree, students must apply for graduation electronically by following the appropriate procedure in their student account on DukeHub. This application indicates the working title of the dissertation, which must be approved by the professor who serves as the primary dissertation advisor.

The basic requirements for preparing the dissertation are prescribed in the "Guide for Electronic Submission of Theses and Dissertations," which is available on The Graduate School Theses and Dissertations website. The dissertation must be completed to the satisfaction of the dissertation advisor, members of the student's milestone committee, and the academic dean of The Graduate School. The dissertation advisor must examine and approve that the dissertation is ready for defense prior to submission to The Graduate School, as indicated by a letter to The Graduate School stating this approval.

An electronic copy of the complete dissertation must be uploaded to ProQuest for review and approval by The Graduate School at least two weeks prior to the defense. Deadlines for dissertation submission are posted on The Graduate School website and must be respected if the student wishes to receive the degree in the semester when the intention to graduate has been formally declared. If the deadlines are missed, the student must register and reapply to graduate in a subsequent term, and pay continuation tuition accordingly.

Final Examination (Dissertation Defense)

The final examination is administered by a milestone examination committee of at least four qualified members of the graduate faculty, who must have at least two weeks to read and review the completed dissertation before the final examination (the dissertation defense). Many programs require a public seminar to present the dissertation's content, in addition to the private, formal examination itself, at which only the candidate and the committee are present. An oral examination by the committee, of at least 90 minutes in duration, shall be focused primarily on the dissertation; however, any question may be asked in the candidate's major field. The final examination may be in person or via remote videoconference, and all members must participate synchronously for the entire duration of the examination.

Successful passing of the final examination, taking into account the dissertation itself and its oral defense, requires at least four affirmative votes and no more than one negative vote. A student who fails the final examination may be allowed to take it a second time, but no earlier than six months from the date of the first examination. Permission to take the second examination must be obtained from the dissertation advisor and the other examining committee members, as well as from the DGS and academic dean. The second examination must be administered by the same committee that conducted the first examination, and all votes must be positive to pass. A second failure renders the student ineligible to pursue the PhD at Duke University.

A student must be registered during the term when they take the final examination. The examination may occur during the break between terms if the student is registered for the terms before and after the break.

Deposit of the Dissertation

After passing the examination and making any minor changes requested by the committee, candidates must upload the final electronic version of the dissertation to ProQuest prior to the relevant graduation deadline for public access in ProQuest and DukeSpace. A student who misses the deadline must apply to graduate in the next term and pay the corresponding tuition. A student must be registered during the term when they submit the final version of the dissertation and graduate. Final, approved doctoral dissertations are scholarly products of Duke University and must become publicly available for reading, though they may be embargoed for a specified period of no more than five years since graduation before becoming publicly accessible. See The Graduate School Theses and Dissertations website for information about electronic submission and about procedures for obtaining a copyright, and the possibility of a temporary embargo before public accessibility.

Graduate Certificates

Certificate Programs

The Graduate School offers graduate certificate programs (most of which are interdisciplinary or multidisciplinary) that draw upon the unique strengths of Duke's research institutes and faculty. Certificate programs are designed to provide graduate students with advanced training in interdisciplinary or emerging fields of knowledge by taking advantage of the distinctive resources available at Duke or in the Research Triangle Park area.

The certificate is a formal statement of the specific coursework and co-curricular requirements a student has completed, and it has proven to be a useful, professional credential to students seeking positions after graduation. The student's official Duke University transcript notes the awarding of the certificate. These certificates are not standalone and cannot be earned independently of the student's degree. Further descriptions, information, and requirements for all certificate programs are to be found in the Programs section.

Eligible students are active post-baccalaureate degree candidates enrolled at Duke University, who must apply to and be accepted by the certificate program(s) of interest. The Office of Academic Affairs monitors these applications, as well as notifies the university registrar when the student has completed all requirements for the certificate. Awarding of the specialized certificate must be concurrent with the awarding of the terminal Duke graduate or professional degree and is indicated on the student's final transcript. Check with certificate program directors for full information about the requirements of various graduate certificate programs.

Approval of Certificate Programs

All certificate programs must be approved by the Executive Committee of the Graduate Faculty and the Dean. The procedures for requesting such approval follow the same guidelines as those used for new degree programs.

Notification of Completion of Certificate Requirements

Certificate candidates must apply to graduate with their certificate(s) separately from applying to graduate with their degree. Certificate granting programs must, each semester, notify the relevant staff member in Academic Affairs, in writing, of graduating students successfully meeting the requirements for certification. After receiving notification, the Office of Academic Affairs will subsequently request that the awarding of the certificate be listed on the student's official transcript.

Graduation, Commencement & Diplomas

Graduation occurs three times per year, in May, September and December. Students who complete their degree requirements in a given term remain registered as students until the degree is conferred at the end of the term. Students must be registered in the term they complete degree requirements and graduate. Diplomas are mailed after graduation directly to the student. Those who complete degree requirements by the end of the fall semester or by the end of a summer term receive diplomas dated in December and September, respectively, by mail and will not be issued until all balances due to the bursar have been paid in full. All degree recipients graduating in a given year are permitted and encouraged to attend the year's culminating University Commencement ceremonies.

Commencement exercises are held once a year, in May, when degrees are conferred to those students who have completed requirements by the end of the spring semester. The May commencement also includes a PhD hooding ceremony. Doctoral students who graduated earlier in the academic year are encouraged to attend the May ceremonies, despite having already received their degrees. The doctoral hooding ceremony does not include master's students or PhD students who have not fully completed their degree requirements.

Degree and Nondegree Admission

Any person who wishes to undertake graduate work at Duke University, whether for degree or nondegree purposes, must be formally admitted to The Graduate School. Prerequisites for admission include a US bachelor's degree (or its equivalent) from a regionally accredited institution. If the degree was granted by an institution outside of the United States, the institution must be accredited by the governing educational body of the country (such as the ministry of education). For some degree programs, satisfactory scores on the Graduate Record Examination (GRE) are also required. International applicants (both degree and nondegree) whose first language is not English are required to also submit official scores for the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or the Duolingo English Test. Students who have studied full-time for two years or more at a college or university where the sole language of instruction is English and in a country where English is the primary spoken language may request an ESL testing waiver. Individual departments may specify additional prerequisites, which can be found on each program page.

An applicant who does not intend to earn an advanced degree at Duke but who wishes to take graduate courses may, and in certain cases only after receiving The Graduate School's approval, apply for nondegree admission. Such admission is granted in two different categories: (1) admission through the Office of Continuing Studies as a nondegree student without departmental affiliation; or (2) admission as a nondegree international exchange student. Credits earned by nondegree students in graduate courses taken at Duke before full admission to The Graduate School may be carried over into a graduate degree program if (1) the action is recommended by the student's director of graduate studies and approved by the dean; (2) the coursework is not more than two years old; (3) the amount of such credit does not exceed one full-time semester; and (4) the coursework received grades of B or better.

A student who has discontinued a program of graduate degree work and who wishes to reenroll must send a written request for readmission to The Graduate School's Office of Academic Affairs. The dean of The Graduate School will make the final decision regarding all requests for readmission.

A student who enters The Graduate School in a master's program must submit a new application to be considered for a doctoral program.

Applicants holding PhDs or their equivalent are generally not eligible for admission to Duke University for a second PhD. The dean of The Graduate School will consider exceptions only if the department or program demonstrates that the proposed field of study is unrelated to the field of the first PhD, and that the educational experience afforded by the proposed doctoral field is essential for the applicant's long-term research objectives. Applicants who have not yet had the opportunity to benefit from a doctoral education will be prioritized in the admissions and financial aid process.

Admissions

Application Procedures

This is a brief summary of information available from The Graduate School admissions website: gradschool.duke.edu/admissions. This website should be consulted for more comprehensive information on all aspects of the application, admission, and award process.

A person seeking admission to The Graduate School may access application and program information online at gradschool.duke.edu/admissions. All required parts of the application form must be filled out completely and submitted to The Graduate School admissions office with the application fee. The necessary supporting documents must also be included as part of the submission of the online application. The application fee is $105. (All fees are based on current charges and are subject to change without notice.) An application fee waiver program is available each year to a limited number of eligible applicants and is detailed online at gradschool.duke.edu/admissions/application-instructions/application-fee. The required supporting documents to apply are: (1) one copy of a transcript from each undergraduate or graduate institution attended; (2) three letters of recommendation; (3) official Graduate Record Examination (GRE) General Test scores for applicants to some programs; and (4) official scores on the GRE Subject Tests for applicants to certain specified departments. Visit gradschool.duke.edu/admissions/application-instructions/gre-scores for a complete list of which programs require the GRE, and those for which it is optional. Applicants to the master of science in global health (MScGH) and the master of arts in applied ethics and policy programs can submit either MCAT or GRE scores. Applicants to the doctor of philosophy (PhD) in business administration program can submit either GMAT or GRE scores.

If an applicant accepts an offer of admission, they must send an official, confidential transcript to The Graduate School for each institution listed in the application. The Graduate School reserves the right to revoke any offer of admission in the case of a discrepancy between the transcript included in the application and the official transcript.

Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant.

Those applying for admission to programs requiring submission of GRE scores, or who wish to submit optional GRE scores, should take the GRE in time for official scores to reach The Graduate School by the appropriate application deadline. Information on the dates and locations of the Graduate Record Examinations can be obtained from the applicant's educational institution or the Educational Testing Service GRE website at ets.org/gre.

TOEFL/IELTS/ Duolingo English Test Policy for International Applicants. If an applicant's first language is not English, the applicant must submit certification of English proficiency demonstrated by official test scores from the International English Language Testing Service (IELTS) (ielts.org) or the Test of English as a Foreign Language (TOEFL) (ets.org/toefl), or the Duolingo English Test (englishtest.duolingo.com/applicants).

TOEFL/IELTS/ Duolingo English Test Waiver Policy. To be eligible for a TOEFL/IELTS waiver, students must have studied full-time for two years or more at a college or university where the sole language of instruction is English and in a country where English is the primary spoken language. The two years of study must be completed prior to application submission.

English Language Requirements for International Students. In addition to submitting an IELTS, TOEFL, or Duolingo English Test score, international students whose first language is not English must demonstrate proficiency in academic English by taking oral and written exams upon their arrival at Duke. Depending on their exam results, students are either exempted from or placed into one or more English for International Students (EIS) courses. Students with EIS requirements must begin these courses in their first year of study.

Part-Time Graduate Study. Very few graduate departments will consider applications from applicants wishing to pursue degree study on a part-time basis. Applicants must contact their department of interest to determine whether they accept part-time students. Admission requirements, procedures, and deadlines are the same for part-time study as for full-time study. Visa restrictions do not allow international students to pursue graduate study on a part-time basis.

Continuing Studies Procedures. An applicant seeking admission as a nondegree continuing studies graduate student at Duke must have received a bachelor's degree from a regionally accredited college or university. More information regarding continuing studies at Duke is available on the Duke University Continuing Studies website at learnmore.duke.edu.

Review of Application and Notification of Status. All applications are considered without regard to race, color, religion, national origin, disability, veteran status, sexual orientation, gender identity, sex, or age.

Application files are assembled in The Graduate School admissions office, where all official record-keeping is maintained. A departmental admissions committee, usually headed by the director of graduate studies, reviews the applications and makes recommendations to the dean of The Graduate School. All offers of formal admission to The Graduate School are made by the dean. The process of admission is not complete until the student accepts the offer online through their Applicant Portal.

Deferrals. Requests for deferral are rarely approved by The Graduate School. Valid reasons for a deferral include health issues, visa issues which are beyond the student's control, or military service. For more information about the deferral process, visit gradschool.duke.edu/admissions/admitted-students/deferring-your-enrollment/.

Immunizations. North Carolina Statute G.S.: 130A-155.1 states that no person shall attend a college or university, public, private, or religious, excluding students attending night classes only and students matriculating in off-campus courses, unless a certificate of immunizations against specified diseases is presented to the college or university. The required forms and instructions are provided to students after their acceptance of the offer of admission. Mandatory immunization requirements for graduate students, including the required form, are available online at students.duke.edu/wellness/studenthealth/immunizations/.

Admissions

Deadlines for Application

It is the applicant's responsibility to make certain that The Graduate School admissions office has received all required materials by the appropriate application deadlines. Only complete applications can be considered. To ensure that the admissions office will have adequate time to assemble all items submitted on an applicant's behalf, application materials should be submitted at least two weeks before the stated deadlines.

Consult The Graduate School's website (gradschool.duke.edu/admissions/application-deadlines) for a more detailed explanation of deadlines and their enforcement.

Fall Semester

Fall application deadlines vary by program and are listed on The Graduate School's website. Applications submitted by these dates are guaranteed a review by the departmental admissions committees. Applications submitted after these dates are not guaranteed consideration but will be considered for admission if all spaces have not been filled, and for financial aid, if funds are still available. All PhD applicants seeking fall admission should meet the stated deadlines, since it is likely that enrollment in many departments will be filled soon after the deadlines.

Spring Semester

The deadline for submission of applications for the spring semester, space permitting, is typically the first business day in October. Very few departments accept new students for the spring semester, and financial aid is not readily available for spring matriculants. Visit the Application Deadlines page of The Graduate School website to determine which departments accept spring matriculants.

Summer Session

Those seeking admission to The Graduate School for the summer session should apply in accordance with the fall deadline schedule. There are two summer sessions, one running from mid-May to late June, the other from early July to mid-August. Very few departments accept new students for the summer session. With the exception of applicants to the master of arts in teaching program (which begins in the summer), applicants who wish to apply for summer admission must obtain special permission from the department of interest and The Graduate School.

Tuition & Fees

Although many students will receive financial assistance for their graduate education, students are responsible for ensuring that they have the means to support themselves and the ability to pay tuition and fees due the university. Below is a summary of expected costs. All figures are estimates for 2025-2026 and are subject to change. For detailed information on the complete cost of attendance for PhD and master's students, visit The Graduate School Cost to Attend webpage, gradschool.duke.edu/financial-support/cost-attend.

TUITION, BY STUDENT	2025-2026 COST PER SEMESTER
Master's (fall/spring)	$33,862
Master's (summer I/II)	16,930
Master's (part-time/continuing, per unit)	3,930
Master of Arts in Liberal Studies	13,383
Master of Arts in Teaching	17,493
Master of Fine Arts	27,012
PhD (fall/spring in years 1-3)	33,862
PhD (fall/spring in years 4+; summer for in all years)	4,680
FEES	
Health Fee	$504 (350 in summer)
Student Recreation Fee (fall/spring only)	195
Activity Fee (fall/spring only)	19
Student Services Fee (fall/spring only)	13
Transcript Fee (first term only)	120
OTHER	
Duke Student Medical Insurance	$3,752
Duke Student Dental Insurance	353
Graduate Audit Fee (per audited course)	535

PhD Tuition

PhD tuition is charged on a per semester basis. The tuition charge for PhD students in their first three years of study is $33,862 per academic semester. Upon approval of the academic dean, one semester of credit may be granted for PhD candidates entering with a previous graduate degree or for one semester of non-degree graduate-level work done at Duke prior to matriculation. Students in their fourth year of study and beyond are charged a reduced tuition rate of $4,680 per academic term. All PhD students in years of funding will be charged the tuition rate of $4,680 for the summer 2026 term, unless on approved leave.

Master's Tuition

Master's tuition for full-time study is charged on a per semester basis. The tuition charge for full-time research master's students is $33,862 per academic semester. Tuition rates are different for Master of Fine Arts ($27,012 per academic semester), Teaching ($17,493 per academic semester), and Liberal Studies ($13,383 per academic semester). Details about the cost of these programs are available by contacting the respective program. Master's students are required to enroll in and pay tuition for three full-time semesters of study, or the part-time equivalent thereof. Some master's programs, such as Medical Physics, Population Health Sciences, and Fine Arts, require four semesters of enrollment. Upon meeting the three-semester requirement, master's students may convert to part-time academic status and will be charged a per credit rate for all remaining credits. The per credit rate is $3,930. Master's students are also charged a part-time rate for summer coursework, not to exceed half the full-time rate for each summer term. Incoming students who are approved to attend on a part-time basis are also charged the current per credit rate.

Student Health Fee

All full-time students and part-time degree candidates are assessed a fee each semester for the use of the Student Health Service. For fall and spring, the fee is estimated at $1,008 ($504 per semester). For summer 2026, the fee is estimated at $350. This fee is distinct from health and dental insurance and does not provide major medical coverage.

Recreation Fee

Graduate students will be charged a recreation fee for the use of on-campus facilities. The fee is $195 per semester. Use of the recreational facilities and payment of the fee is optional for PhD students in their sixth or later years.

Student Activity and Student Services Fees

All graduate students will be charged student activity fees of $19 and student services fees of $13 per academic semester.

Transcript Fee

All entering students will be charged a one-time mandatory fee of $120 for transcripts. This fee entitles the student to an unlimited number of Duke transcripts. Requests for transcripts of academic records can be made via DukeHub, Duke's online student records system, which can be accessed at dukehub.duke.edu.

Other Miscellaneous Fees

Marine Laboratory Fee

For Marine Laboratory investigators' research table fee, please contact the Nicholas School of the Environment.

Audit Fee

Auditing classes is permitted on a space available basis with the consent of the instructor. Degree-seeking students may audit courses without charge during the fall and spring terms. An audit fee will be charged for all nondegree students in any term, and may be charged for degree-seeking students during the summer term, depending on the course.

Parking Fee

Students should contact the University Parking and Transportation Services Office regarding parking fees.

Living Expenses

Health Insurance

Students will be charged for enrollment in the Duke Student Medical Insurance Plan (Duke SMIP) in the fall semester, unless proof of other comparable health insurance is provided to the Student Health Center no later than their communicated deadline. For current Duke SMIP rates, please visit the Student Health website, studentaffairs.duke.edu/studenthealth.

Dental Insurance

Dental insurance is not required, but is an optional benefit. Students will be charged for enrollment in the Duke Student Dental Insurance Plan (Duke SDIP) in the fall semester. For current Duke SDIP rates, visit the Student Health website students.duke.edu/wellness/studenthealth.

Books and Supplies

Books and supplies are estimated at $990 for twelve months.

General Living Expenses

For detailed information on the complete cost of attendance for PhD and master's students, visit The Graduate School Cost to Attend webpage, gradschool.duke.edu/financial-support/cost-attend.

Payment Policies

The bursar's office emails statements to registered graduate students for tuition, fees, and other charges approximately four to six weeks prior to the beginning of classes each semester. The amount due on the statement is payable by the due date listed on the statement. Student account statements are also available online. Inquiries regarding statements can be directed to the bursar's office at bursar@duke.edu or (919) 684-3531.

As part of the admission agreement to Duke University, students are required to pay all statements as presented. If full payment is not received, a late payment penalty charge on the past due amount is charged on the subsequent statement. The past due amount is defined as the amount due from the previous statement minus payments, financial aid, loans, and other credits received prior to the due date listed on the prior statement.

Failure to receive an invoice does not warrant exemption from the payment of tuition and fees nor from the penalties and restrictions.

Non-registered students will be required to make payment for tuition, fees, and other charges at the time of registration. In addition to late payment charges, students with accounts in default may be subject to the following restrictions:

- blocked from registering for future terms
- not eligible to receive compensatory or fellowship stipend
- blocked from access to copies of transcripts of academic records

- not able to have academic credits certified
- not be permitted to go on leave of absence
- not eligible to receive a diploma at graduation
- subject to withdrawal from the university
- subject to having the past due student account referred to a collection agency and credit bureaus

Refund Policies

Refunds for Withdrawal from School during Fall and Spring Semesters. In the event of death, refund of full tuition and fees for the term will be granted. In all other cases of withdrawal from the university, students may have tuition refunded according to the following schedule:

- Withdrawal before classes begin: full refund, including fees
- Withdrawal during the first or second week of classes: 80 percent refund*
- Withdrawal during the third, fourth, or fifth week of classes: 60 percent refund*
- Withdrawal during the sixth week of classes: 20 percent refund*
- Withdrawal after the sixth week: no refund

*Fees are not refunded after the start of the term, including the student health fee.

If a student has to drop a course for which no alternate registration is available, drops special fee courses (music, golf, etc.), or drops a paid audit during the first two weeks of the drop/add period, a full refund may be granted with the approval of the dean. There is no refund for courses from which a student withdraws after the drop/add period has ended.

PhD Funding

The contributions of graduate students are highly valued in the university and Duke has a strong commitment to fully fund the PhD students it selects for graduate study for five consecutive years. The Graduate School and its graduate programs offer a wide array of financial support. Funding is available from annually allocated fellowship awards funds, instruction, endowed fellowships, foundation, and other private support, as well as federal and privately sponsored research grants, training grants, and fellowships. PhD students are also encouraged to independently seek out external funding as these opportunities often provide valuable recognition of a student's academic potential and promise.

Students admitted to a PhD program are typically supported for a period of five years, provided that satisfactory academic progress is being made. Standard support packages for PhD students may include a scholarship that covers all or a portion of tuition and fees, health insurance, and a fellowship and/or assistantship stipend to help defray the cost of living expenses. Students with funding questions specific to their studies are encouraged to communicate with their graduate program.

Duke also provides tuition scholarships to PhD students in their sixth year who do not have tuition support from external or other institutional sources. Sixth-year PhD students are eligible to apply for a tuition scholarship if they have applied for but did not obtain external tuition funding or competitive Graduate School tuition funding for the sixth year of study.

Department and Program Fellowships and Assistantships

Tuition and fee scholarships for study toward a PhD are provided by The Graduate School. For information about fellowship and/ or assistantship stipends in a specific department or program, students should contact the director of graduate studies for their program. In general, a student's support package may be composed of several different types of funding, including:

- **Full or partial scholarships** to cover tuition, mandatory fees, and health insurance.
- **Fellowship stipends** are awarded by the department or program. Many departments also offer endowed fellowships.
- **Training grant appointments** for US citizens and permanent residents participating in federally funded training programs.
- **Research assistantships** are available for graduate students whose training enables them to assist individual faculty members in certain departments.
- **Teaching assistantships**, which are opportunities offered to graduate students for instructional training, offer roles such as preceptors and section leaders, tutors, and graders.

Some master's programs utilize, when possible, the federal work-study program to help provide financial support. As a result, some departments may require or request that students complete the Free Application for Federal Student Aid so that eligibility for work-study funds can be determined. This form can be completed online at the Free Application for Federal Student Aid website, studentaid.gov/h/apply-for-aid/fafsa.

Interdisciplinary Programs and Centers

In addition to the departmentally-based awards, several interdisciplinary programs and centers offer fellowship and assistantship awards to both incoming and continuing students interested in the program areas. These include programs in Documentary Studies, Medieval and Renaissance Studies, Gender, Sexuality & Feminist Studies, Latin American and Caribbean Studies, Visual studies, and in centers such as the Kenan Institute for Ethics, Duke Innovation & Entrepreneurship, and the John Hope Franklin Center for Interdisciplinary and International Studies.

Fellowships for Incoming and Continuing Students

The Graduate School funds several competitive fellowships for incoming and continuing PhD students. For incoming students, selection is based on departmental nomination during The Graduate School application process. Continuing students interested in applying for Graduate School fellowships should follow the application procedures listed on The Graduate School Financial Support website. Selection of award recipients is made on the basis of academic merit and departmental recommendations.

Most fellowships for incoming and continuing students will provide a full tuition and mandatory fee scholarship, payment of student's health insurance premium, and stipend support. Some awards also provide stipend supplements to the standard departmental stipend, research and/ or travel expense funding.

A comprehensive list of all available fellowships offered through The Graduate School can be found on the Financial Support website, as well as a funding database to assist in identifying funding opportunities. In addition to fellowships, The Graduate School also works to secure funding for advanced students who need to conduct research overseas in order to complete their dissertation projects. Additional information regarding these opportunities are also available through the school's Find Funding database. For more information, visit gradschool.duke.edu/financial-support/find-funding.

National, Regional, and Foundation Awards

In addition to those awards available through the university, applicants are urged to compete for national and foundation awards available for graduate study. The Duke University Office of Research Support website, ors.duke.edu, lists awards available from a variety of federal and private sources, as well as awards funded by the university. External awards, which are prestigious and a valuable acknowledgement of a student's intellectual capability and academic promise, typically replace departmental or The Graduate School fellowship awards.

Payment and Taxation of Awards

Students must be enrolled in The Graduate School in order to receive fellowship or assistantship support. Tuition and fee scholarships and health insurance payments are posted directly to a student's bursar account by The Graduate School Office of Budgets and Finance.

Payments for both fellowships and assistantships are generally managed by students' departments for distribution. It is highly recommended, however, that students sign up to receive stipend payments through direct deposit to their bank account. Under the Tax Reform Act of 1986, both fellowship stipends and assistantships are taxable.

For US Citizens: Fellowship stipends may be reduced, for tax purposes, by the amounts paid for tuition, mandatory fees (other than the health and recreation fees), and required books, supplies, and equipment. For general information about the taxability of scholarships and fellowships, students should see IRS publication 970, which can be found on the Internal Revenue website.

For International Citizens: Stipend payments are subject to withholding of federal and state income taxes, unless there is an existing tax treaty between the student's country and the United States stating otherwise. Information concerning tax treaties by country can also be found on the Internal Revenue Service website. In addition, there is an IRS requirement that tuition payments for foreign students must be reported to the federal government. More information on taxation of foreign nationals and current tax treaties is available on the Corporate Payroll website.

Students have ultimate responsibility for ensuring that their tuition and fees are paid. Students should review statements received from the bursar's office regularly and quickly resolve payment problems or issues that arise. Students with questions about their bursar accounts should contact the assistant to the director of graduate studies in their department, the bursar's office, or The Graduate School Office of Budgets and Finance.

Payment of Awards

It is the policy of The Graduate School that full-time students may not complete more than 19.9 hours per week in non-dissertation-related research appointments, teaching assistantships or other instructional positions, or other financial support sources (both on and off campus).

Payment of graduate student scholarship, fellowship, and assistantship support are subject to the following policies:

- Registration policy: Students must be registered in The Graduate School in order to receive fellowship or assistantship support
- Satisfactory academic progress
- Payment of bursar accounts for fall, spring, and summer
- Refunds for withdrawal from school

Financial Aid & Funding

Financial Aid

In addition to the information shown below, students should also review the Duke University Bursar's FAQs. Students can contact grad-finaid@duke.edu with questions about financial support.

For students pursuing a master's degree in The Graduate School, funds for tuition scholarships may be available within individual departments and programs. Master's students who are US citizens are also eligible for federal financial aid and federal work-study. Master's applicants should indicate their need for financial support on their application for admission, and US citizens should complete the online Free Application for Federal Student Aid. Graduate students are required to make satisfactory academic progress in their programs in order to remain enrolled in The Graduate School and to receive financial aid.

Loans

Students who plan to supplement their financial resources through loans or federal work-study employment must complete the above mentioned FAFSA. Students are encouraged to complete the FAFSA online. In order for The Graduate School to obtain the information electronically, Duke's school code (002920) must be indicated on the form.

Students who are enrolled at least half-time, who are US citizens or permanent residents, and who meet the federal criteria for need are eligible for loans.

Student Loans

Duke University offers the William D. Ford Federal Direct Loan Programs for graduate students, including Direct Unsubsidized Loans and Direct PLUS Loans. Each of these loans has different terms and conditions, but they are generally deferrable until after graduation or until the student is enrolled for less than half-time.

These federal loans are available only to United States citizens and, generally, only to master's students, because PhD scholarships and fellowships typically exceed the cost of attendance. Visit the Duke Financial Aid website for more information and application procedures for student loans.

Duke Credit Union Graduate Student Assistance Program (GSAP)

The Duke Credit Union has partnered with The Graduate School to provide a short-term loan package for PhD students who occasionally find themselves in need of funds on a short-term basis in order to settle into a new home when they begin their PhD program at Duke, purchase a computer, or address an unexpected emergency. GSAP offers qualified PhD student loans of up to $2,500 for up to 12 months at competitive interest rates. Payroll deduction is available. See the Duke Credit Union website for details and to apply.

Helen & Gordon McKinney Emergency Loan Fund

The Helen & Gordon McKinney Emergency Loan Fund provides short-term, low-interest loans to PhD students for general expenses such as settling into a new home, purchasing a computer, or addressing unexpected emergencies. The maximum loan amount is $1,000 with a repayment term no longer than 12 months at a 3.5% interest rate. Interest begins after the second month following loan disbursement. Students must possess the ability to repay the loan while they are enrolled as there is no deferment period. Students cannot have more than one loan outstanding at any point in time, and may only request three loans during their academic career. Applicants with outstanding federal aid will be subject to the federal cost of attendance regulations.

Inquiries should be sent to grad-finaid@duke.edu.

Work-Study Program Employment

Limited funds are available for graduate students through the federal work-study program. A student who wishes to apply for federal work-study must complete a FAFSA. Students considering the possibility of federal work-study for the fall should submit FAFSA forms prior to January 31. Eligibility requirements are similar to those of the federal loan programs. Awards are based on the assignment, eligibility of the student, and availability of funds. In addition to departmental opportunities, the Duke University Career Center maintains a listing of opportunities for students.

All Programs

All Programs

Doctoral Programs

Ecology PhD
Economics PhD
Electrical and Computer Engineering PhD
English PhD
Environment PhD
Environmental Policy PhD
Evolutionary Anthropology PhD
Genetics and Genomics PhD
German Studies (Carolina-Duke Graduate Program) PhD
History PhD
Immunology PhD
Integrated Toxicology & Environmental Health PhD
Literature PhD
Marine Science and Conservation PhD
Materials Science and Engineering PhD
Mathematics PhD
Mechanical Engineering and Materials Science PhD
Medical Physics PhD
Medical Scientist Training PhD
Molecular Cancer Biology PhD
Molecular Genetics and Microbiology PhD
Music PhD
Neurobiology PhD
Nursing PhD
Pathobiology and Translational Biosciences PhD
Pharmacology PhD
Philosophy PhD
Physics PhD
Political Science PhD
Population Health Sciences PhD
Psychology & Neuroscience PhD
Public Policy PhD
Religion PhD
Romance Studies PhD
Sociology PhD
Statistical Science PhD

All Programs

Master's Programs

Analytical Political Economy (AM)
Applied Ethics and Policy (AM)
Art and Art History (AM)
Biomedical Engineering (MS)
Civil and Environmental Engineering (MS)
Computer Science (MS)
Critical Asian and Middle Eastern Humanities (AM)
Dance (MFA)
Digital Art History/Computational Media (AM)
East Asian Studies (AM)
Economics (AM)
Economics and Computation (MS)
Electrical and Computer Engineering (MS)
Experimental and Documentary Arts (MFA)
Global Health (MS)
Global Health—Duke Kunshan University (MS)
History (AM)
Humanities (AM)

Interdisciplinary Data Science (MS)
Liberal Studies (AM)
Materials Science and Engineering (MS)
Mechanical Engineering and Materials Science (MS)
Medical Physics (MS)
Medical Physics—Duke Kunshan University (MS)
Political Science (AM)
Population Health Sciences (MS)
Quantitative Financial Economics (MS)
Religious Studies (AM)
Slavic and Eurasian Studies (AM)
Statistical Science (MS)
Teaching (MAT)

All Programs

Certificates

Advanced Quantitative Methods in the Social Sciences
African & African American Studies
Anthropology & History
Biomolecular and Tissue Engineering
Cognitive Neuroscience
College Teaching
Computational Biology and Bioinformatics
Developmental Psychology
East Asian Studies
Gender, Sexuality, and Feminist Studies
Global Health
History and Philosophy of Science, Technology, and Medicine
Information Science + Studies
Innovation & Entrepreneurship
Interdisciplinary European Studies
Interdisciplinary Medieval and Renaissance Studies
Nanoscience
Philosophy of Biology
Photonics

Art and Art History PhD

Program Code: G-ART-PHD
Degree Designation: Doctor of Philosophy
Department: Art & Art History Department
Website: aahvs.duke.edu/graduate

Program Summary

The Department of Art, Art History & Visual Studies offers graduate work leading to the PhD in art and art history. The doctoral program is competitive with the leading programs in the country. The department is committed to full and equal funding of its students during their time in residence at Duke. Admission to the program is limited to between four and six new students per year.

The PhD program is integrally connected with many interdisciplinary, theoretical, and international initiatives in the humanities at Duke. The doctoral program is distinguished by its flexibility and cross-disciplinarily. It requires a thorough grounding in the form and meaning of objects and sites, as well as in their theoretical and historical contexts. Coursework has been designed to prepare students for careers in art and architectural criticism, research and teaching in the academy, museum, and art gallery. Faculty in the program are expert in a broad range of areas of art history, as well as in a variety of media, from architecture, sculpture and painting to video and cybernetics.

For further information on the PhD program, prospective applicants may visit the department's website, or write to the director of graduate studies.

Academic Requirements

- 12 to 15 courses (excluding language courses), of which at least 10 are taken from the Art, Art History & Visual Studies department
- 2 to 4 courses taken from other departments at Duke

- Language proficiency in at least two foreign languages
- Preliminary exam

Biochemistry PhD

Program Code: G-BCH-PHD
Degree Designation: Doctor of Philosophy
Department: Biochemistry Department
Website: biochem.duke.edu/phd-biochemistry

Program Summary

The Department of Biochemistry offers graduate work leading to the PhD in biochemistry. Diverse undergraduate majors, such as chemistry, biology, biophysics, molecular biology, and genetics, can prepare students for graduate study in Biochemistry, with advanced courses in chemistry being particularly useful.

The mission of the Duke University Biochemistry Graduate program is to educate and mentor students from diverse background in the fundamentals of biochemical principles and practice though courses and research by guiding students in their thesis research project and preparing them for a career in research, education, or other disciplines. The program promotes a commitment to excellence in research scholarship and fosters a spirit of creativity, service, and respect, within an environment that is ethical, inclusive, and diverse.

Specific program aims are:

1. Coursework: Graduates will be trained in a broad understanding of cellular structure and function at a molecular level; with deep knowledge in specific disciplines such as nucleic acid biochemistry, molecular genetics, biophysical methods, mechanistic enzymology, glycobiology, and membrane biogenesis, dynamics, transport and receptor biology; and critical scientific thinking skills.
2. Research: Graduates will develop skills a) in the laboratory and/or with computational research in order to reveal new biological principles; b) to perform in-depth analysis, interpretation, and presentation of research results; and c) to conduct ethical and responsible research.
3. Career Development: Graduates will be prepared for careers in interdisciplinary biochemical fields through training in scientific research, responsibility and ethics, teaching, and science communication.

Academic Requirements

Core courses consist of Biochemistry 658, 659, and 681 and seminar courses Biochemistry 745S/746S and 790S; additional courses are recommended in areas of specialization (e.g. Biochemistry 631, 667, 668, 695, and/or 696) as well as courses offered through other departments. The biochemistry department cooperates in multidisciplinary programs such as the University Programs in Genetics and Genomics, Cell and Molecular Biology, and Structural Biology and Biophysics, to offer students the opportunity to pursue advanced research and study in biochemistry and fulfill the requirements for the PhD related to those fields.

Biology PhD

Program Code: G-BIO-PHD
Degree Designation: Doctor of Philosophy
Department: Biology Department
Website: biology.duke.edu/graduate

Program Summary

The Department of Biology offers a variety of training opportunities leading to the PhD in biology.

Students in the department may specialize in a wide variety of areas including anatomy; behavior; physiology; cellular and molecular biology; community, ecosystem, physiological, and population ecology; evolution; functional morphology; developmental, ecological, molecular, organelle, and population genetics; genomics; and phylogenetic systematics.

There is a high level of interaction among the various areas of biology and other programs. Faculty members participate in the University Programs in Developmental Biology, Ecology, Genetics and Genomics, Cellular and Molecular Biology, Computational Biology and Bioinformatics, Structural Biology and Biophysics, and Neurobiology; tropical research is facilitated through the university's membership in the Organization for Tropical Studies. There are also strong relationships with the Departments of Evolutionary Anthropology (primatology, phylogenetic systematics, macroevolution), Mathematics (theoretical biology), and Psychology (behavior); the Pratt School of Engineering (biomechanics); the Medical Center (molecular biology and genomics); and the Nicholas School of the Environment (ecology).

Students entering the program generally have a broad background in biological sciences supplemented with basic courses in chemistry, mathematics, and physics. Biochemistry and physical chemistry are strongly recommended for students interested in molecular areas, and advanced courses in mathematics are recommended for students in population genetics and ecology. While deficiencies may be corrected by taking appropriate courses during the first year of graduate study, it is advised that students search widely in this bulletin for information about the intellectual resources of the university. Courses below the 500 level may not be applied toward the required credits needed for a post-baccalaureate degree. With the approval of their Director of Graduate Studies

and the Associate Dean for Academic Affairs, graduate students may enroll in lower-level courses, but these courses will not count toward any graduation requirement and will not be included in a student's GPA calculation. Special attention should be given to announcements of the programs and departments listed above, as well as to those of Cultural Anthropology, History, Immunology, Molecular Genetics and Microbiology, Pharmacology, Philosophy, and Sociology, and of the Pratt School of Engineering and the Nicholas School of the Environment.

Academic Requirements

The philosophy of the department is that you need not spend a great deal of time in coursework. You should take only the courses that fill gaps in areas that will be needed in your research, and spend most of your time starting your research.

- During the first three semesters: take up to three tutorials with different faculty members in the department. The tutorial requirement is waived as soon as you declare an advisor. Tutorials may involve laboratory work, directed reading in the primary literature, greenhouse or field studies, mathematical or computer modeling, or any other activity that would assist you in identifying a suitable dissertation topic. Other goals of the tutorials are to expose students to the diversity of faculty research interests in their specialty and to help them to identify an appropriate advisor and dissertation committee.
- By the end of the 3rd semester, you must choose an advisor and the advisor must convene an initial meeting of the dissertation committee. Dissertation committees will consist of at least four faculty members, one of which will represent your minor (see below). The goals of the initial meeting are to assess the novelty and feasibility of your proposed dissertation topic, to ascertain whether you need to take any additional courses to demonstrate preparedness for the preliminary exam, and to decide the format of the written dissertation proposal (see below). If you fail to meet with your committee before the end of the 3rd semester, the Director of Graduate Studies (DGS) will notify you in writing, and will discuss with you and your advisor ways to resolve any difficulties.
- Preferably by the end of the 4th semester, but certainly by the end of the 6th semester, you must pass an oral preliminary examination to establish candidacy for the PhD. One week prior to the exam, you must present a written essay describing your proposed dissertation research to your committee. The exam itself will cover the specific research areas addressed in your proposal, but will also test your depth of knowledge in your area of specialty and your breadth of knowledge in Biology as a whole.
- When the dissertation research is completed, you will present the written dissertation to your committee two weeks prior to the dissertation defense (the dissertation also has to be submitted to the Grad School two weeks before the defense). You are also required to present your results in a seminar. You are expected to complete the degree requirements as soon as possible, but students making progress toward their degree will be considered to be in good standing through the 12th semester.

Biomedical Engineering PhD

Program Code: G-BME-PHD
Degree Designation: Doctor of Philosophy
Department: Biomedical Engineering Department
Website: bme.duke.edu/phd

Program Summary

Biomedical engineering is the discipline in which the physical, mathematical, and engineering sciences and associated technology are applied to biology and medicine. Contributions range from modeling and simulation of physiological systems through experimental research to solutions of practical clinical problems. The goal of the Graduate Program in Biomedical Engineering is to combine training in advanced engineering, biomedical engineering, and the life sciences so that graduates of the program can contribute at the most advanced professional level. The doctoral dissertation should demonstrate significant and original contributions to an interdisciplinary topic, accomplished as an independent investigator. The major, current research areas of the department are: bioelectric engineering, biomaterials, biomechanics and mechanobiology, biomedical imaging and biophotonics, biosensors and bioinstrumentation, computational modeling of biological systems, drug and gene delivery, immune engineering, neural engineering, synthetic and systems biology, and tissue engineering and regenerative medicine. Every biomedical engineering PhD student is required to serve as a teaching assistant as part of their graduate training.

Academic Requirements

- 30 Credits of Coursework
    - Life Science course—3 credits
    - Advanced Mathematics course—3 credits
    - Additional courses—24 credits
- 2 Seminars
- 2 Semesters of Teaching Assistantship (TA)
- Responsible Conduct of Research (RCR)
    - Orientation
    - 4 RCR forums
- Thesis and Defense

Biostatistics PhD

Program Code: G-BST-PHD
Degree Designation: Doctor of Philosophy
Department: Department of Biostatistics and Bioinformatics
Website: biostat.duke.edu/education-and-training/phd-biostatistics

Program Summary

The Department of Biostatistics and Bioinformatics offers a doctoral degree in biostatistics. The doctoral program is offered through the Duke University Graduate School.

As biomedical research becomes increasingly quantitative and complex, individuals with exceptional analytic skills, a strong foundation in human biology, and the ability to communicate statistical principles effectively to multidisciplinary research teams are needed. Demand is high for individuals formally trained in biostatistics.

Duke University Medical Center is a world-class medical research institution that provides an ideal setting for training biostatisticians to gain exposure to state-of-the-art biostatistical methodology in the context of cutting-edge science research. Duke's Doctorate in Biostatistics Program is unique in its balanced focus on three core competencies: statistical methodology, biology, and communication. All faculty members in the Department of Biostatistics and Bioinformatics at Duke are actively engaged in research, with projects collectively spanning a broad array of biomedical research areas. Faculty members actively practice what they teach and are dedicated to ensuring that students develop the skills and knowledge necessary to succeed as biostatisticians.

Academic Requirements

In general, the Doctorate in Biostatistics includes the following components:

- The first year will focus on basic statistical theory and methods, communication, and the biomedical context.
- The second year includes more advanced inference and theory of linear models, along with specialized training in categorical data analysis, survival analysis, generalized linear models, and analysis of correlated and longitudinal data.
- Five elective courses are required to broaden the breadth of knowledge. Two of those courses are chosen within a 'cognate' field, such as epidemiology, biology, biophysics, environmental health, genetics, etc., to complement the student's biostatistical area of interest.

Distinguishing Features

The Duke program offers several novel features that extend the training of our students beyond that found in a traditional biostatistics program. The core curriculum contains the following novel courses:

1. A course sequence (BIOSTAT 703 and BIOSTAT 706) emphasizing biomedical concepts and communication.
2. A survey course of modern inferential techniques and theory (BIOSTAT 911) targeted specifically to advanced graduate students.
3. A student-led seminar, Current Problems in Biostatistics (BIOSTAT 900). Students explore topics in blocks that involve student presentations and invited talks from faculty and other experts in the field.

Business Administration PhD

Program Code: G-BUS-PHD
Degree Designation: Doctor of Philosophy
Department: Business PhD
Website: fuqua.duke.edu/programs/phd

Program Summary

The PhD program in Business Administration prepares candidates for research and teaching careers at leading educational institutions and for careers in business and governmental organizations where advanced research and analytical capabilities are required. The PhD program emphasizes independent inquiry, the development of competence in research methodology, and the communication of research results. Students are introduced at the outset of the program to rigorous coursework and to the research activities of faculty and of other students. A ratio of doctoral students-in-residence to faculty of less than one-to-one facilitates collaborations between PhD students and faculty. The school offers programs of research and training in the areas of accounting, decision sciences, finance, management and organizations, marketing, operations management, and strategy.

The PhD program typically requires five years of full-time in-residence study and work. Students are required to be in-residence the entire duration of the program.

The PhD program is administered by and follows the policies of The Graduate School. Additional information may be obtained by visiting fuqua.duke.edu/programs/phd.

Academic Requirements

The program requires that doctoral candidates acquire and demonstrate expertise in their chosen area of study and in research methodology. This competence may be gained from coursework, participation in seminars, and independent study. Each student must complete a preliminary examination (a paper or other requirement depending on the area) by the end of the third year of residence and a proposal examination by the end of the fourth year of residence. The final requirement is the presentation of a dissertation. Each student works with the faculty in the student's area to determine the specific program of study.

Cell and Molecular Biology PhD

Program Code: G-CMB-PHD
Degree Designation: Doctor of Philosophy
Department: Cell & Molecular Biology Program
Website: medschool.duke.edu/education/biomedical-phd-programs/program-cell-and-molecular-biology

Program Summary

Mission: The mission of the CMB program is to provide a fair, welcoming, highly interdisciplinary training experience that empowers all students to become rigorous, responsible, and independent scientists who are equipped with the technical, operational, and professional skills needed to thrive in the modern biomedical workforce. CMB achieves this through a trainee-centered and flexible curriculum, basic skills development, a focused research experience, career advancement opportunities, and a robust program of faculty mentoring. An emphasis on student success and well-being ensures that CMB produces exceptional biomedical scientists with a wide range of career paths.

Program goals: The overall objective of the CMB program is to provide safe, fair, flexible, and rigorous training that prepares all students for fulfilling careers in basic scientific research, education, or human health. Our goal is for > 95% of matriculants to complete the Ph.D. by the end of year 5. (Average time to degree for students entering Duke through CMB over the last ten years is six years.) All CMB graduates acquire: (1) a broad knowledge of many biomedical disciplines through a cohesive core curriculum that provides foundational skills and the flexibility to explore; (2) a deep expertise in a chosen area of specialization through advanced course electives and dissertation research; (3) operational skills in critical thinking, research independence, and creativity; (4) the ability to identify significant biological problems and to develop rigorous experimental design strategies; (5) the analytical tools required to interpret complex data; (6) the cooperative skills necessary for team-based research; (7) the ability to clearly convey scientific concepts and research results to specialists, non-specialists, and the general public; and (8) the knowledge and skills needed to transition to a chosen profession within the biomedical workforce. Through custom-built student-tracking software tools, CMB measures and evaluates the outcomes of these efforts at the student and program levels.

CMB is an umbrella-type program, comprising ~135 faculty and ~90 students across the University, bridging basic science and clinical departments in the School of Medicine, as well as members in Trinity College of Arts and Sciences departments (Biology, Chemistry, Psychology and Neuroscience) and Pratt School of Engineering (Bioengineering). CMB researchers study a wide variety of biological questions and model systems, including viruses, bacteria, archaea, plants, nematodes, *Drosophila*, rodents, non-human primates, human cells and tissues, and computational biology. The highly interdisciplinary nature of the CMB community means that our students become both experts in their own research subject matter and well-versed in a range of contemporary topics in cell and molecular biology.

In the first program year, students attend courses (see below), rotate in 3-5 labs (8 weeks each), and meet regularly with the Director of Graduate Studies and other advisors and program leadership. In the spring of Year 1, CMB students affiliate with a lab for their dissertation research under the supervision of their PI. Program requirements after the first year include a preliminary exam (written NRSA F31-style research proposal and oral defense; spring of Year 2), annual thesis committee meetings with standardized, competency-based evaluation rubrics, annual individual development plans, participation in the CMB Symposium (annual, student-run conference on the Duke campus), acceptance of at least one first-author publication of original research, and defense of a written dissertation. CMB students have no teaching requirement, though TA and Instructor of Record opportunities are available for students with a career interest in teaching. Notably, CMB faculty are required to complete evidence-based mentor training in order to host students for rotations or accept them for dissertation research. CMB, the Graduate School and Duke University provide many nationally recognized resources for student safety, wellness, professional development, and career exploration/preparation. CMB is supported by NIGMS grant 1T32GM142605 and by Duke University School of Medicine institutional funds.

Chemistry PhD

Program Code: G-CHEM-PHD
Degree Designation: Doctor of Philosophy
Department: Chemistry Department
Website: chem.duke.edu/graduate

Program Summary

The Department of Chemistry offers graduate work leading to the PhD in chemistry.

While students are normally admitted only to the PhD program, some students do ultimately pursue an MS degree. Entering graduate students should normally have taken an undergraduate degree in chemistry, along with related work in mathematics and physics. Graduate courses are offered in the fields of analytical, biological, inorganic, organic, physical, and theoretical chemistry, and there are active research programs in each of these areas. In addition, chemistry graduate students are also involved in a variety of interdisciplinary research programs, including biological chemistry, toxicology, pharmacology, and molecular biophysics.

Further details concerning the general departmental program, admissions, departmental facilities, the faculty, ongoing research, and financial support may be obtained from the director of graduate studies, email dgs@chem.duke.edu, or the department's website.

Academic Requirements

Students should complete 22 course credits by the end of the fall semester of the second year of residence. Normally, students will complete a minimum of 12 course credits during their first semester, along with the research orientation seminar (Chemistry 701S). Courses from outside the department may be substituted for chemistry graduate courses, with permission of the director of graduate studies.

Civil and Environmental Engineering PhD

Program Code: G-CEE-PHD
Degree Designation: Doctor of Philosophy
Department: Civil & Environmental Engineering Department
Website: cee.duke.edu/academics/phd/

Program Summary

The Department of Civil and Environmental Engineering (CEE) at Duke University offers programs of study and research leading to the MS and PhD degree in civil and environmental engineering. The goal of the CEE program is to develop engineers who are capable of guiding the world toward a healthier, safer, and more sustainable future. Research and teaching activities focus on three signature areas:

- **Theoretical, Computational, & Applied Mechanics**, advancing mathematics and computing for applications in geomechanics, materials, hydrology, and fluid dynamics
- **Environmental Health Engineering**, motivated by needs to protect human health through monitoring, predicting and managing our natural resources and the built environment
- **Systems, Risk & Decision**, deepening fundamental engineering expertise required for risk assessment, hazard mitigation, and the design of resilient systems

Research efforts within the department focus on complex natural and built systems. With collaborators around the globe, we apply engineering methods to find solutions to significant challenges—aiming for a healthier and resilient world. Duke CEE researchers advance and protect the durability of infrastructure systems and natural resources, develop cutting-edge models to transform the engineering design process, and explore solutions that address human impacts on the environment and health.

Academic Requirements

Duke CEE's graduate program offers a customized, flexible educational experience tailored to meet the needs of each student's chosen focus area. Students begin their program with a blend of introductory and specialized coursework. As they advance, the emphasis shifts from coursework to the development of essential leadership and research skills.

- 30 course credits (15 credits from core courses as required by the CEE Graduate Study Track and 15 course credits related to the student's area of research)
- Participation in the department's Graduate Colloquium and Seminar Series
- Preliminary Exam during Year 2
- Research Proposal Defense Exam in Year 3 or 4
- Complete Responsible Conduct of Research (RCR) training
- Complete two semesters of course teaching assistant experience
- Complete and defend doctoral dissertation

Students entering the CEE PhD program with a Masters degree in civil engineering, environmental engineering or another relevant field may transfer up to 12 relevant course credits. Approval is required from the Preliminary Exam Committee and the Director of Graduate Studies.

Classical Studies PhD

Program Code: G-CLST-PHD
Degree Designation: Doctor of Philosophy
Department: Classical Studies Department
Website: classicalstudies.duke.edu/graduate

Program Summary

The Department of Classical Studies offers graduate work leading to the PhD in Classical studies.

Work in the department encompasses all aspects of the Greco-Roman world: students in the program are able, through coursework, directed research, and their own teaching, to prepare for careers of teaching and research as broadly trained classical scholars. For regular admission, students should offer at least three years of college study in one of the classical languages and two in the other. Before developing a specialization within the program, students are expected to acquire facility in both Greek and Latin, a broad knowledge of the literatures and of ancient history and archaeology, and command of research methods. Reading knowledge of German and French (or other, as research warrants) is required for the PhD.

The resources of the department include important collections of Greek and Latin manuscripts and papyri, and a study collection of Greek and Roman art.

Academic Requirements

Courses, typically 18 over the course of five semesters

- Qualifying Examinations
  - Proficiency Examinations in Greek and Latin, or in Archaeology and either Greek or Latin
  - Reading proficiency assessments in German and French (or other)
- Preliminary Examination comprising:
  - General examinations designed to test breadth of knowledge of classical antiquity
  - Specialized research in two particular scholarly or content domains. The Dissertation Special helps define dissertation plans; the Open Special helps develop depth in a second, preferably unrelated, area.
- Dissertation & Dissertation Defense

Cognitive Neuroscience PhD

Program Code: G-CNS-PHD
Department: Cognitive Neuroscience
Website: dibs.duke.edu/education/graduate/cnap

Program Summary

The Cognitive Neuroscience Admitting Program (CNAP) provides an interdisciplinary education in cognitive neuroscience. Cognitive neuroscience uses the techniques and principles of neuroscience to understand the neural and psychological mechanisms that underlie cognitive processes such as attention, perception, memory, decision making, motor control, conscious awareness, and many others. This program is a graduate admitting program designed for students who are interested in broad training that integrates ideas and techniques across this diverse and rapidly growing field. Research experience will provide expertise in the major methods that drive cognitive brain research. Program faculty are drawn from a wide range of departments and programs including psychology and neuroscience, neurobiology, psychiatry, biomedical engineering, philosophy, evolutionary anthropology, computer science, linguistics, neurology, and radiology.

Academic Requirements

Students who matriculate to the Cognitive Neuroscience Admitting Program do not initially affiliate with any particular department or advisor. They begin by completing broad coursework and laboratory research rotations within the umbrella of the CNAP program. Typical early coursework includes an optional neuroscience bootcamp followed by a core course in cognitive neuroscience and a quantitative elective course. During their first year, students complete rotations in three laboratories, often chosen because they investigate different research topics or use diverse research methods. By their second year, students select a primary advisor and declare a department with which they will affiliate and complete their degree. Students typically also select a secondary advisor who provides complementary expertise in a relevant research topic. After the degree-granting department has been selected, students become full members of that department, while also remaining affiliated with the CNAP program and participating in its activities. The doctoral degree that is eventually obtained consists of a PhD in the field of the selected department, with a concentration in cognitive neuroscience.

Computational Biology and Bioinformatics PhD

Program Code: G-CBB-PHD
Degree Designation: Doctor of Philosophy
Department: Biostatistics and Bioinformatics
Website: https://medschool.duke.edu/education/biomedical-phd-programs/computational-biology-and-bioinformatics-program

Program Summary

The Duke University Doctoral Program in Computational Biology and Bioinformatics (CBB) is an innovative, interdisciplinary degree program designed to provide rigorous training at the interface of the quantitative and biological sciences. CBB students receive classroom training and engage in original research under the supervision of program faculty, representing more than eighteen departments spanning biological and computational disciplines in the medical school and main campus.

The CBB Program is explicitly designed to prepare students for the broad and rapidly evolving field of computational biology research. To this end, the curriculum is flexible and tailored to the needs and interests of each student through regular meetings with the Student Advisory Committee, consisting of faculty experts in the various disciplines that make up computational biology on campus.

Along with this didactic training, faculty-supervised research is an integral component of the training program. This begins in the first year when students join faculty-led research groups for research rotations, introducing new research problems and methods in an immersive environment. Trainees conduct three rotations in their first year of study and choose a dissertation advisor after the spring semester of their first year.

For additional information, visit the website or email cbb_admin@duke.edu.

Academic Requirements

The CBB core curriculum emphasizes the integration of biology and computation, as reflected in the syllabus of each core course, which includes lectures on quantitative principles and methods along with biological applications. The core courses taken by all CBB students include Computational Biology and Bioinformatics 520, Computational Biology and Bioinformatics 540, and one of Computational Biology and Bioinformatics 561, 662, or 663. In addition to the core courses, all CBB graduate students are expected to take several elective courses, within CBB and outside the program, in areas of biological and quantitative sciences related to their chosen research. In addition, all first and second-year students must register for Computational Biology and Bioinformatics 510S (Computational Biology Seminar) and Computational Biology and Bioinformatics 511 (Journal Club).

Computational Media, Arts & Cultures PhD

Program Code: G-CMAC-PHD
Degree Designation: Doctor of Philosophy
Department: Computational Media, Arts & Cultures
Website: cmac.duke.edu/phd

Program Summary

The Computational Media, Arts & Cultures Program offers graduate work leading to the PhD in computational media, arts & cultures. It is co-sponsored by the Department of Art, Art History & Visual Studies (AAHVS), the Program in Literature, the Information Science + Studies (ISS) Certificate Program, and the John Hope Franklin Humanities Institute. The doctoral program is small, experimental, and interdisciplinary. Its focus is on the intersection of media arts and humanities, sciences, and technology, both in theory and in practice. The program is committed to full and equal funding of its students during their time in residence at Duke, for up to five years. Admission to the program is usually limited to two students every two to three years.

The PhD program is affiliated with the interdisciplinary arts and humanities media labs led by the CMAC program faculty. Lab emphases include: digital archaeology; emergent media arts; information science and studies; digital art history and visual culture; art, law and markets; digital humanities; media theory; and physical computing. At the core of the program is the computational revolution and its implications for how humans live, think, work, create, and communicate within and across various disciplines. Critical engagement with the global, social, and cultural impact of computational media is a central feature and value of the program, alongside media affordances and effects within existing and emerging fields. In keeping with the program ethos, mentoring in the program is collaborative, though each student also identifies one or two primary advisors.

The PhD program shares its administrative support with the Department of AAHVS and is housed in the historic Smith Warehouse on East Campus. Students in the program are encouraged to participate in activities with other graduate students such as those in Art History and Visual Culture, Literature, the MFA in Experimental and Documentary Arts, the Digital Art History/Computational Media MA, the Information Science+Studies Certificate, and the Labs associated with the John Hope Franklin Humanities Institute. Many of our students also participate in vertically-integrated Bass Connections teams and other co-curricular activities as collaborators and mentors. In addition, the annual CMAC Exhibition and Symposium features the work of, and is organized by, our students.

For further information on the PhD program, prospective applicants may visit the program's website or write to the director of graduate studies.

Academic Requirements

The program requires students to engage in both critical and historical study of computational media and to have an active computational media practice. This may take the form of digital art, data analysis, design, programming, or some combination of these. Over the course of the program of study, students are expected to take a mix of graduate seminars in the participating programs, as well as practice-based courses where appropriate, and to participate in one or more labs formally or informally.

All students are expected to take language exams in one "human" and one "computer" language, with specific expectations set based on the individual students' preparation and program of study.

The qualifying exams take place at the end of the third year, and include a portfolio as well as written and oral examinations.

The dissertation includes both formal written and practice-based dimensions.

Computer Science PhD

Program Code: G-CPS-PHD
Degree Designation: Doctor of Philosophy
Department: Computer Science Department
Website: cs.duke.edu/graduate/phd

Program Summary

The Department of Computer Science offers programs leading to the MS and PhD in computer science, with areas of concentration including algorithms, artificial intelligence, scientific computing and numerical analysis, and systems and architecture.

Outstanding programs in algorithms and computational complexity; computational geometry; internet systems, networking, and security; computer architectures and distributed systems; computational biology; biological computing and nanotechnologies; databases and cloud computing; machine learning theory and applications; and artificial intelligence, computational economics, computer vision, natural language processing, and scientific computing provide exciting and challenging research opportunities to students in computer science. The research interests of the department's faculty overlap with these areas and with research areas in other disciplines such as biology, engineering, nanotechnology, environmental sciences, economics, biochemistry, statistics, and medicine.

Academic Requirements

The PhD program consists of coursework and a sequence of research milestones culminating in a doctoral dissertation. The PhD course program includes a breadth requirement, satisfied by earning qualifying credit in four of six core areas of subject knowledge.

All entering PhD graduate students participate in a special seminar course (COMPSCI 701S) to introduce them to the discipline and profession of computer science. A student entering graduate study in computer science should have a strong undergraduate grounding in the fundamentals of calculus, linear algebra, and discrete mathematics, and basic knowledge of data structures, algorithms, and one or more higher-level computing programming languages; some undergraduate research experience is preferred. Students should consult the official departmental document Computer Science Graduate Program Degree Requirements for a full explanation of requirements not listed in this bulletin.

Cultural Anthropology PhD

Program Code: G-CA-PHD
Degree Designation: Doctor of Philosophy
Department: Cultural Anthropology Department
Website: culturalanthropology.duke.edu/graduate/phd

Program Summary

The department offers graduate work leading to the PhD in cultural anthropology. On the way to the PhD students may also acquire a master's. Students are expected to take an active role in development of their own research goals and plan of study, compiling a portfolio of papers and other writing over the first three years.

Applications for admission to both the PhD and JD/MA programs are accepted every year. Review the departmental website for more information.

Academic Requirements

Requirements include courses in anthropological theory, cross disciplinary coursework, and spoken and/or written competence in at least one foreign language, at the level appropriate to the planned research program. The core courses include two year-long sequences: Cultural Anthropology 801S and 802S (Theories in Cultural Anthropology), required of first-year graduate students, and research/grant writing seminar Cultural Anthropology 803S (Research Methods) and 804 (Grant Writing), required in the fourth and fifth semesters. Preliminary field research is required in the summer following the first and second years of classes.

The Guidelines for Graduate Students in the Doctoral Program in Cultural Anthropology fully describes these and additional requirements and the detailed steps in the student's graduate career.

Developmental and Stem Cell Biology PhD

Program Code: G-DVB-PHD
Department: Developmental Biology
Website: sites.duke.edu/dscb

Program Summary

The Developmental and Stem Cell Biology (DSCB) Training Program provides a broad interdepartmental consortium of students and faculty doing developmental research at the molecular, cellular, genetic, evolutionary, and system levels. Each of the commonly used animal modes is investigated, as well as plant models. The curriculum is designed to provide a strong core of knowledge in developmental biology, while allowing students the flexibility to explore individual interests in particular fields, such as developmental genetics, mechanisms of development, stem cells and regeneration, or evolution and development.

Students entering The Graduate School through the DSCB training program usually declare by the end of the first year a department in which to earn their PhD. The student must then fulfill all of the normal graduation requirements of the chosen department to complete their PhD studies. This includes additional coursework and the successful passing of a qualifying or preliminary exam. The student then focuses on thesis research leading to a doctoral degree from that department, with a certificate in developmental and stem cell biology.

Academic Requirements

In the fall of the first year, DSCB students take CMB 710A-F (the Cell and Molecular Biology modules) and UPGEN 778A-F (Genetic and Genomic Solutions to Biological Problems). The program encourages students to take at least 6 modules with a developmental focus. DSCB students are also required to take a full-semester graduate-level course in either cell biology or genetics along with the weekly student-organized informal research seminar series, in which program students present short talks on their research projects. In the spring of the first and second years, students will be required to take CELLBIO 830 (the developmental and stem cell biology colloquium). Finally, a key component provided by the program is a teaching experience.

Earth and Climate Sciences PhD

Program Code: G-EOS-PHD
Degree Designation: Doctor of Philosophy
Department: Earth & Ocean Sciences
Website: nicholas.duke.edu/academics/doctoral-programs/earth-climate-sciences-ecs

Program Summary

The Division of Earth and Ocean Sciences offers research opportunities in three broad areas of geoscience: earth-surface processes, oceans and climate, and earth resources. Earth-surface processes in EOS focus on the interactions between life, water, and landscapes, including coastal ecomorphodynamics and remote sensing, watershed ecohydrology, and landscape evolution, including that of coupled human-landscape systems. Oceans and climate research in EOS includes ocean circulation, atmospheric dynamics, paleoclimatic/ paleoenvironment reconstruction, marine biogeochemistry, and ocean/atmosphere interactions, particularly as they relate to global climate change. In addition, research in earth resources addresses the geologic formation and human use of mineral, energy, water, and land resources, including mineral formation, life-cycle analysis, energy consumption/emissions, water quality as it relates to human health, and the role of technology in the Anthropocene.

Laboratory facilities available in the department are described in this bulletin under the chapter “Resources for Study”.

Up-to-date information about the division and the faculty can be found at nicholas.duke.edu/academics/doctoral-programs/earth-climate-sciences-ecs.

Academic Requirements

Students entering the graduate program normally have an undergraduate degree in one of the natural sciences. It is expected that the incoming student will have taken one year of college chemistry, one year of college physics, and mathematics through calculus. Both MS and PhD graduate students take 30 course credits of courses and research. Typically, the total time for a PhD is five years beyond the BS or three years beyond the MS. Because the division encourages participation in fieldwork and other research opportunities outside the university, there are no firm time limits for degrees, except as required by the university.

MS on the Way to PhD Option

A student in the PhD program may elect to get an MS degree while working toward the PhD. If this option is elected, the requirements are the same as for the MS program in terms of coursework, time limits, and thesis requirements.

The student must indicate their intention to receive the MS degree before the deadline in the semester during which they wish to receive the degree. If agreeable to both the student and their committee, the MS defense can be part of the PhD preliminary exam. If this is the case, both a MS Defense and a Preliminary Exam Report must be submitted to The Graduate School. The MS thesis can be on the same topic as the PhD dissertation or different. If the former, the MS thesis must be a fully independent piece of work, which can be referenced but not duplicated in the PhD dissertation.

Ecology PhD

Program Code: G-ECL-PHD
Degree Designation: Doctor of Philosophy
Department: University Program in Ecology
Website: ecology.duke.edu

Program Summary

The University Program in Ecology (UPE) is an interdepartmental PhD program comprising faculty from the Nicholas School of the Environment, Arts and Sciences (biology and evolutionary anthropology departments), The Pratt School of Engineering (department of civil and environmental engineering), and the Medical School (department of molecular genetics and microbiology). The UPE Program offers training toward a PhD in ecology.

The UPE provides interdisciplinary training in all aspects of ecology, including physiological and behavioral ecology; population and evolutionary ecology; community and landscape ecology; biogeochemistry; and ecosystem and global-change ecology. The program serves to integrate an exceptionally broad and diverse collection of faculty expertise found in various departments and schools at Duke. The UPE is a rigorous, research-oriented graduate program with an excellent record of scholarly publications by the program's students. All students participate in a two-semester, graduate-level core course that focuses on both historical and contemporary foundations of ecology (theory, principles, and research); any additional coursework is tailored to each student's specific interests and needs. Students organize and run a weekly seminar series and participate in readings groups, symposia, and other activities run by the program.

Special facilities for study and research include the Marine Lab (nicholas.duke.edu/marinelab), Duke Forest (dukeforest.duke.edu), Duke Wetlands Center (nicholas.duke.edu/wetland), the Organization for Tropical Studies (tropicalstudies.org), plus an extraordinary array of major analytical equipment and additional resources (nicholas.duke.edu/marinelab/about/facilities, biology.duke.edu/research-areas).

For information on other courses available to UPE students, visit ecology.duke.edu.

Academic Requirements

- Complete two semesters of core courses on historical and contemporary foundations of ecology (UPE 701, 702)
- Complete coursework appropriate to the specialty of the research program
- PhD committee includes at least four faculty members, two of which are UPE faculty members

For more information on degree requirements and timeline, visit ecology.duke.edu/degree-requirements.

Economics PhD

Program Code: G-ECON-PHD
Degree Designation: Doctor of Philosophy
Department: Economics Department
Website: econ.duke.edu/phd-program

Program Summary

Duke University offers a world-class doctoral program in economics, featuring a vibrant faculty of exceptional scholars and teachers along with superior research facilities. The faculty is dedicated to anchoring all teaching and research firmly in the core disciplines of microeconomics, macroeconomics, and econometrics. The first year of the program lays the critical foundation necessary for later work in field courses and dissertation-level research.

Advanced study is offered in economic theory, macroeconomics, applied microeconomics (including industrial organization, labor economics, public economics, and development economics), econometrics, history of economics, and certain fields outside the Economics Department such as finance. The standard time to completion of the PhD is five to six years.

Students preparing to enter these programs will find an undergraduate background in mathematics, engineering, computer science, statistics, or economics to be very helpful.

For additional information, visit the program website.

Academic Requirements

In their first year of study, Economics PhD students complete a two-semester sequence of first-year core courses spanning microeconomics, macroeconomics, and econometrics. Students are required to meet qualifying criteria in each of these core sequences either by achieving sufficiently high marks, or by achieving a passing grade on the corresponding core subject qualifying exam administered in the summer. During the second and third years, students complete courses in major- and minor-area fields, leading to successful completion of a field paper, field exam, and, by the end of the third year, the preliminary exam. Following successful completion of the preliminary exam, students continue their research and coursework to prepare for their dissertation defense, typically conducted during the 5th or 6th year.

For more information about program requirements and fields of study, please see the Economics PhD Program Requirements page.

Electrical and Computer Engineering PhD

Program Code: G-ECE-PHD
Degree Designation: Doctor of Philosophy
Department: Electrical & Computer Engineering Department
Website: ece.duke.edu/phd

Program Summary

Graduate study in the Department of Electrical and Computer Engineering (ECE) is intended to prepare students for leadership roles in academia, industry, and government that require creative technical problem solving skills. The department offers both PhD and MS degree programs with options for study in a broad spectrum of areas within electrical and computer engineering. Research and course offerings in the department are organized into four areas of specialization: computer engineering; engineering physics; microelectronics, photonics, and nanotechnology; signal and information processing. Detailed descriptions of course offerings, faculty research interests, and degree requirements may be found on the department's website.

Interdisciplinary programs are also available that connect the above areas with those in other engineering departments, computer science, the natural sciences, and The School of Medicine. Students in the department may also be involved in research conducted in one of Duke's centers (e.g. the Fitzpatrick Institute for Photonics and Communications, the Center for Metamaterials and Integrated Plasmonics). Recommended prerequisites for graduate study in electrical engineering include knowledge of basic mathematics, statistics, and physics, electrical networks, electromagnetics, and system theory. Students with nonelectrical and/or computer engineering undergraduate degrees are welcome to apply but should discuss their enrollment and course requirement options with the director of graduate studies.

Academic Requirements

A qualifying examination is required for the PhD program and must be taken by the beginning of the third semester of enrollment. The exam is intended to assess the student's potential for success as a researcher in their chosen sub-discipline. To ensure breadth of study, PhD students are required to take courses outside their area of specialization. There is no foreign language requirement.

English PhD

Program Code: G-ENGL-PHD
Degree Designation: Doctor of Philosophy
Department: English Department
Website: english.duke.edu/graduate

Program Summary

The department only admits students seeking a PhD. Particular faculty interests currently cutting across the chronological and geographical categorizations of literature include the cultural work of memory; orientalism; mourning, history, and reconciliation; literatures and discourses of the Atlantic; diasporic literatures; religion; sound studies; and science and technology. Students are encouraged to read broadly in English and American literatures (including four-nations British literature, English and America in the Black Atlantic, the Irish Atlantic and other Atlanticist literatures, Anglo-diasporic literatures, and postcolonial literatures). They are also encouraged to interrogate the constitution and writing of literary and cultural history, and to develop the specific range of linguistic, philosophical, and historical skills relevant to their chosen field and their chosen intervention therein.

Academic Requirements

In addition to the dissertation, the PhD in English requires completion of a minimum of eleven courses, a reading proficiency in at least one foreign language (the specific language to be determined by the student's major areas of academic concentration), and a preliminary examination of three subfields (one major, two minor) that consists of both a written and oral part by the end of the third year of study. Within six months of the preliminary exam, a dissertation chapter meeting is required with the thesis committee.

Environment PhD

Program Code: G-ENV-PHD
Degree Designation: Doctor of Philosophy
Department: Nicholas School of Environment
Website: nicholas.duke.edu/academics/doctoral-programs/environment-env

Program Summary

Major and minor work for the environment graduate program is offered through the environmental sciences division of the Nicholas School of the Environment. The research emphasis of the environmental sciences and policy division is in the areas of ecosystem science and management, environmental chemistry and toxicology, aquatic and atmospheric sciences, and environmental social sciences.

College graduates who have a bachelor's degree in one of the natural or social sciences, forestry, engineering, business, or environmental science will be considered for admission to a degree program. Students will be restricted to the particular fields of specialization for which they are qualified academically. The Graduate School programs usually concentrate on some area of natural resource and environmental science/ecology, systems science, or economics/policy, while study in resource and environmental management is more commonly followed in one of the professional master's degree programs of the Nicholas School of the Environment. For more complete program descriptions and information on professional training in forestry or environmental studies, the Bulletin of Duke University: Nicholas School of the Environment should be consulted.

Nicholas School of the Environment faculty normally accept to the academic degree program only those students who wish to pursue a PhD. Applicants are strongly encouraged to contact the individual faculty member under whose supervision they are interested in pursuing graduate study. Information about each faculty member's area of research interest can be found in the Nicholas School of the Environment bulletin and on the school's website. The degree is available for students enrolled in the joint law program, and the MS degree may be awarded as part of the doctoral program. Students generally are not admitted to the and MS tracks as standalone programs in the Nicholas School with the exception of the Division of Earth and Ocean Sciences, which accepts students to a MS track.

Environmental Policy PhD

Program Code: G-ENP-PHD
Degree Designation: Doctor of Philosophy
Department: Nicholas School of Environment, School of Public Policy
Website: nicholas.duke.edu/academics/doctoral-programs/university-program-environmental-policy-upep & sanford.duke.edu/academics/doctoral-program/university-program-environmental-policy

Program Summary

Duke's University Program in Environmental Policy (UPEP), jointly administered by the Sanford School of Public Policy (SSPP) and the Nicholas of the Environment (NSOE), is a five-year PhD program for intense research training in environmental policy. It combines disciplinary rigor—starting with the core PhD courses in the economics or the political science department—with topical knowledge and policy processes.

UPEP draws on the extensive resources of both schools and numerous other departments and research institutes at Duke. Students work with PhD students in other disciplines, within each school and across Duke. UPEP's students and faculty conduct world-class research in both domestic and international contexts on topics including climate change, air quality, water quality, biodiversity, community resource management, ecosystem services, energy, environmental health, fisheries, forest management and overlaps with poverty and development. Graduates are prepared for academic positions in a range of departments and professional schools and professional positions in domestic and international public agencies, environmental organizations, research institutes, and consulting firms.

UPEP builds on a long history at Duke of engagement with environmental policy issues. NSOE's predecessors—the School of Forestry, the Marine Lab, and the Geology Department—were founded in the 1930s. SSPP traces its history to the formation of the Institute of Policy Sciences and Public Affairs in 1971. Each school has offered environment-focused PhD training for many years. UPEP was created in 2010 to bring together groups at Duke already engaged in similar types of social science research and training in the environment—the first PhD program in the United States that is jointly administered by a school of the environment and a school of public policy.

Students seeking admission to UPEP should apply to The Graduate School, specifying UPEP. Applicants are encouraged to contact faculty members to learn more about their current research projects and interest in accepting new doctoral students. Direct inquiries to the assistant to the director of graduate studies at upep-inquiry@duke.edu.

Academic Requirements

The following is a summary list of the categories for 40 total credits:

- Public Policy Core Courses (PUBPOL 901, 902) (6 credits)
- Dissertation Proposal Seminar (PUBPOL 908) (3 credits)
- Environmental and Resource Economics (3+ credits)
- Disciplinary Concentration (in either Economics or Political Science)
    - Core Theory Courses (6+ credits)
    - Research Methods (6+ credits)
    - Fields (environmental economics or environmental politics) (6+credits)
    - Other requirements and electives (6+ credits)

Evolutionary Anthropology PhD

Program Code: G-EVA-PHD
Degree Designation: Doctor of Philosophy
Department: Evolutionary Anthropology
Website: evolutionaryanthropology.duke.edu/graduate

Program Summary

Admission to the PhD Program in Evolutionary Anthropology is not contingent on any particular course of study at the undergraduate level. The goal of the graduate program is to provide students with a broad-based background in organismal biology with a focus on primate and human evolution.

For general information, visit the website. To learn about research opportunities visit the websites of the faculty.

Academic Requirements

Courses of study are tailored to meet individual needs, but all students will be expected to take courses in four of six core areas: evolutionary theory, behavior and ecology, paleontology, morphology and physiology, research design and statistics; and genetics and genomics.

Genetics and Genomics PhD

Program Code: G-GGP-PHD
Degree Designation: Doctor of Philosophy
Department: University Program in Genetics
Website: upg.duke.edu

Program Summary

The Duke University Program in Genetics and Genomics (UPGG) is an umbrella graduate training program that spans several basic science and clinical departments and bridges the medical center and the college of arts and sciences. There are more than 90 faculty with three adjunct faculty, and more than fifty-four students in the program, which was founded in 1967 and has been continuously supported by a training grant from the NIH for more than thirty-five years. Over the past several decades, the program has served as an important forum for training and education in genetics and genomics, including model systems (bacteria, yeast, fungi, drosophila, zebrafish, mouse), population genetics, and human genetics. The program has close links with several genetic and genomic centers and institutes across the university and medical school. The Duke UPGG is unique in that it is degree granting.

Students admitted to the University Program in Genetics and Genomics obtain a PhD by working with faculty of the interdepartmental University Program in Genetics and Genomics.

Academic Requirements

The curriculum requirements for the Duke University Program in Genetics and Genomics are relatively flexible. Students are required to take three full-semester courses—University Program in Genetics 778 (Genetic Approaches to the Solutions of Biological Problems) during fall of first and second years; BIOTRAIN 720 (Grant Writing for Biomedical Scientists) fall of the second year—as well as one semester of a literature-based genetics and genomic journal club class (University Program in Genetics 701, fall of first year), one semester of critical skills in scientific presentation (University Program in Genetics 701, spring of the first year- note this course number may change), two seminar classes (University Program in Genetics 716, University Program in Genetics 750), one additional full-semester course with an emphasis in genetics, and two mini-courses selected from a variety of offerings. By the end of the second year, students should have completed 24 graded course credits. Courses for first-year students are chosen in consultation with the director of graduate studies and a first-year advisory committee. Courses are available and encouraged for students past the first year of study, and decisions about additional coursework are made in consultation with the student's faculty advisor and committee to complement the requirements of the student's own research interests.

In addition to courses, students participate in other educational activities. These include an annual student organized retreat and a biweekly student research seminar series (University Program in Genetics and Genomics 716). Students organize the distinguished lecturer series with advice from a faculty committee member, and students host the dinners with distinguished speakers. Although a teaching experience (TA) is not required, interested students have the opportunity to develop teaching skills as an assistant for one semester. Finally, students complete a preliminary examination typically during the second year of graduate school, and form their thesis committee.

German Studies (Carolina-Duke Graduate Program) PhD

Program Code: G-CDG-PHD
Degree Designation: Doctor of Philosophy
Department: German Studies
Website: carolina-duke-grad.german.duke.edu

Program Summary

One of the leading programs and largest faculties in German Studies in North America, the Carolina-Duke Graduate Program builds our vibrant intellectual community around three core commitments:

- Texts: we emphasize the careful interpretation of literature, film, and other media and discourses.
- Theories and Methods: we offer deep engagement with methodologies such as literary theory, philosophy, intellectual history, and science studies, as well as affiliations across the disciplines with Jewish Studies, Literature departments, History, Music, Philosophy, Divinity, Art History, Political Science, and Women's and Gender Studies.
- Historical Depth: we anchor intellectual development within knowledge of German-language literature and culture from the medieval to contemporary periods.

Through close collaboration with faculty advisors, each student molds their individual research agenda while receiving pre-professional guidance and mentored pedagogical training at both an elite private university and a top public university.

Students apply to a single, fully-merged program and graduate with a diploma bearing the names of both Duke University and the University of North Carolina at Chapel Hill. The program offers students who remain in good standing at least six years of full funding, including tuition, living stipend, and health insurance.

Academic Requirements

Students take courses full-time in their first year of study; in subsequent years they acquire teaching experience at both a private (Duke University) and a public (University of North Carolina at Chapel Hill) university. Multiple program options are available to students, from the study of historical periods and genres (medieval to contemporary) to literary criticism and theory. Interdisciplinary work is strongly encouraged.

Course of Study

- **14 Courses**, to include the following:
    - Five Core Courses:
        - Foreign Language Pedagogy, Theories, and Practices
        - Foundations in German Studies I, 1000 - 1750
        - Foundations in German Studies II, 1750 to 1900
        - Foundations in German Studies III, 1900 to the Present
        - Theories and Methods in German Studies
    - 2 Courses outside the German Studies program that complement your areas of interest in an interdisciplinary fashion
- **German Language Proficiency** (Superior level rating on the American Council on the Teaching of Foreign Languages (ACTFL) in all four competencies: reading, writing, speaking, and listening)
- **Second Foreign Language Competency** (a language besides English and German)
- **Writing proficiency review**
- **Preliminary examination**
- **Dissertation Chapter Review**
- **Oral dissertation examination**

In addition, students are strongly encouraged to attend the Program's monthly works-in-progress seminar, at which faculty, advanced graduate students, and guests present their current research.

History PhD

Program Code: G-HIST-PHD
Degree Designation: Doctor of Philosophy
Department: History Department
Website: history.duke.edu/graduate

Program Summary

Candidates for the degree of doctor of philosophy prepare themselves for examinations in three or four fields, at least three of which shall be in history. The choice of fields is determined in consultation with the student's supervisor and the director of graduate studies. The department offers graduate instruction in the broad historical areas of North America; Latin America; Europe; Great Britain and the Commonwealth; Russia; Japan; China; South Asia; Middle East; and Africa; and in the thematic fields of women's history; military history; history of science, technology, and medicine; environmental history; labor history; and slave societies.

Academic Requirements

The candidate for the PhD must demonstrate a reading knowledge of one foreign language, ancient or modern, prior to the preliminary examination. All students are expected to take History 701, 702, 703, and 704. In addition, each student has to take a combination of reading colloquia courses (History 790S-01 through 790S-14) and research seminars (courses numbered History 890S-01 through History 890S-14), or equivalent classes.

Immunology PhD

Program Code: G-IMM-PHD
Degree Designation: Doctor of Philosophy
Department: Integrative Immunobiology Department
Website: immunology.duke.edu

Program Summary

The Department of Integrative Immunobiology offers graduate work leading to the PhD in immunology.

Immunology is the study of the cells, proteins, and genes that protect against infection and malignancy. Immunology encompasses innate and natural, nonspecific defense mechanisms, as well as specific immune responses that generate immunologic memory. Immunology is by its nature a bridging science. The roots of immunology lie in the study of infectious disease, vaccine development, organ transplantation, immunity to malignancy, and immunotherapy. Modern research in immunology draws on recent advances in cell and molecular biology, biochemistry, genomics, and informatics to determine how the immune system functions. In turn, immunology has contributed to understanding biological structure, eukaryotic gene organization and expression, signal transduction, and intracellular protein transport and assembly.

Research programs are available in many aspects of molecular and cellular immunology, including immunogenetics. The department is a participating member in the following university programs: cell and molecular biology, University Program in Genetics and Genomics, the Medical Scientist Training Program, Center for AIDS Research, molecular cancer biology, and the Developmental Biology Training Program.

The Department of Integrative Immunobiology has outstanding facilities for carrying out all aspects of immunologic research. A description of the PhD program, prerequisites for admission, and research in the department may be found on the website.

Academic Requirements

Required Graded Coursework

Graded coursework should be completed within the first two years of the program. 24 hours of coursework is required including the following Immunology core courses. Students must obtain a B grade to meet programmatic requirements.

- IMMUNOL 544 Principles of Immunology (3 credits)
- IMMUNOL 701D Pillars of Immunology (1 credit)
- IMMUNOL 731S Immunology Seminar (1 credit x 4 semesters)
- IMMUNOL 791A/791B Research in Immunology (4 credits)
- IMMUNOL 601 Immunology of Human Disease (1 credit)
- IMMUNOL 800 Comprehensive Immunology (3 credits)

Required Non-Graded Coursework

Immunology students are required to enroll in these two courses annually through completion of the program.

- IMMUNOL 732S Immunology Seminar (1 credit per semester, 3rd year students and beyond)
- IMMUNOL 735/736 Topics in Immunology (1 credit per semester, starting in spring, starting in 1st year spring)

Additional Requirements

- **Teaching Requirements.** All students are required to participate in one semester of supervised teaching. The Program in Immunology believes doctoral students should be prepared to teach at the university level. Thus, the Program requires one semester of supervised teaching to undergraduate and graduate students in IMMUNOL 544 (Principles of Immunology) or to graduate students in IMMUNOL 701D (Pillars of Immunology).
- **Responsible Conduct of Research (RCR).** All PhD students are required to participate in a specified number of hours of RCR training as required by The Graduate School, encompassing BIOTRAIN 750, 751, 753, 754, and two RCR forum electives in Year 5+.
- **Qualifying Preliminary Exam**
- **Dissertation Proposal and Annual Progress Report**
- **Dissertation**

Integrated Toxicology & Environmental Health PhD

Program Code: G-TXE-PHD
Department: Integrated Toxicology Program
Website: sites.nicholas.duke.edu/envhealth

Program Summary

The Integrated Toxicology and Environmental Health Program (ITEHP) provides students with the theoretical and practical bases for research, employment, and teaching in toxicology. This interdepartmental program brings together graduate students, postdoctoral fellows, and faculty members from a variety of scientific disciplines to address exposure, toxicological and associated environmental health problems from their molecular basis to clinical and environmental consequences. The ITEHP includes participation of faculty members from the departments of biochemistry, cell biology, chemistry, engineering, neurobiology, pathology, pharmacology and cancer biology, and the Nicholas School of the Environment, including the Duke University Marine Laboratory. Among the principal areas of concentration in the program are neurotoxicology and neurological disease, epigenetics, genetic toxicology, cancer, developmental toxicology and children's health, environmental exposure and toxicology, and pulmonary toxicology and disease. Duke faculty members have a variety of collaborative research efforts and, in some cases, student rotations are available with scientists at the nearby laboratories of the National Institute of Environmental Health Sciences (NIEHS), and the Environmental Protection Agency (EPA).

Application to the program can be made in two ways.

1. **Direct Admission:** If a student's primary interest is toxicology, then they may apply for admission directly through the ITEHP. Applicants should indicate their Intended Degree on their Graduate School application as "PhD. (Biomedical Sciences Programs – School of Medicine)" and their Department/Degree as "Integrated Toxicology and Environmental Health – Ph.D." Students admitted directly into the program affiliate with a degree-granting department (including various PhD programs in the Nicholas School of the Environment, Pratt School of Engineering, or School of Medicine) depending upon their choice of research mentor, typically at the end of their first year. Students directly admitted to ITEHP are awarded a full fellowship (tuition, fees, and stipend), and these training grant fellowships are restricted to US Citizens or Permanent Residents only. Non-US Citizens who are interested in ITEHP must apply via Option #2 below through a participating department and pursue the ITEHP certificate.
2. **Certificate Option:** Students with a primary interest in a departmentally based field may also apply to the ITEHP by indicating their Intended Degree as "Ph.D. (All Others)" and their Department/Degree as their program of interest (e.g. "Environment – Ph.D."). Intended Degrees include graduate programs within Duke University's Schools of Arts and Sciences, Medicine, Engineering, or Environment). Applicants should also enter "ITEHP certificate" in the free text Area(s) of Interest field on the graduate school application. In addition, these students must send an email to ITEHP@duke.edu in order to indicate interest in the ITEHP certificate. (NOTE: It is also possible for students to add the ITEHP certificate option after they matriculate. Contact the program for more details.)

There is no difference in the eventual degree granted through either mechanism; both routes result in a PhD granted by a specific department, with certification in toxicology. It is expected that most students will have a strong undergraduate preparation in mathematics and the physical and biological sciences with demonstrated excellence of performance as judged by grades in coursework and letters of recommendation from former instructors. Each student in the program will take a series of courses in toxicology, environmental health, and statistics as well as courses specified by their department. A student will be expected to choose a dissertation advisor in their department at least by the end of the first two semesters in the program and will normally be expected to begin dissertation research during the third semester in residence. Upon satisfactorily completing all degree requirements in the program and in the department, students will be jointly recommended for the PhD.

Students are offered admission to the program with fellowship support based on rank among all applicants. ITEHP students who are directly admitted into the program (vs. adding on the certificate option) are funded fully through the program's training grant fellowship mechanism for the first two years of study. For each entering year, approximately three full fellowships (tuition, fees, and stipend) are awarded to toxicology graduate school applicants.

Please note that toxicology and environmental health training grant fellowships are restricted to US citizens or permanent residents. Non-US citizens who are interested in the integrated toxicology and environmental health program will need to apply and request funding directly through a participating department.

Applicants must submit a personal essay, transcripts, and three letters of recommendation. GRE score submission is optional. Applicants can also include a short video component in the Departmental Requirements section of their application; this *optional* video is a helpful additional tool for the ITEHP Admissions Committee, enhancing holistic review of applicants. It is expected that coursework and research experience will vary among applicants but that the applicant's academic credentials will be sufficient to ensure successful completion of the degree.

Further information may be obtained from the ITEHP program, Duke University, Box 90328, Durham, NC 27708; ITEHP@duke.edu; sites.nicholas.duke.edu/envhealth.

Academic Requirements

- Thesis advisor must be a faculty member of ITEHP.
- At least one (1) additional member of the candidate's thesis committee must be a faculty member of ITEHP.
- A candidate admitted to the PhD program directly by ITEHP must complete three (3) lab rotations in their first year of study. The rotations must include laboratories in at least two (2) different departments and two (2) different schools. A candidate pursuing the ITEHP certificate who was admitted through another PhD program will follow the rotation rules of their admitting program.
- PHARM 533: Essentials of Pharmacology, Toxicology, and Drug Discovery
- ENVIRON 501: Environmental Toxicology
- Complete one (1) of the following:
    - ENVIRON (or PHARM, cross-listed) 815: Focused Topics in Toxicology, OR
    - ENVIRON 869: Environmental Law Clinic, OR
    - EOS 701S: Research Orientation Seminar, OR
    - BIOTRAIN 720: Grant Writing for Biomedical Scientists (previously PHARM 710: Papers and Grant Writing Workshop 710)
- PHARM 733: Experimental Design and Biostatistics for Basic Biomedical Scientists
- ENVIRON (or PHARM, cross-listed) 847S and 848S: Seminar in Toxicology, fall and spring. NOTE: Attendance at this seminar series is expected during the first two years, and highly encouraged thereafter.
- Present a seminar on their dissertation work to the program, usually during the last year.
- Doctoral committee must be approved by the graduate school at least 30 days prior to preliminary exams.

Literature PhD

Program Code: G-LIT-PHD
Degree Designation: Doctor of Philosophy
Department: Global Cultural Studies in the Literature Program
Website: literature.duke.edu/graduate

Program Summary

The PhD Program in Literature offers qualified students the opportunity to develop individual courses of study—markedly interdisciplinary and often interdepartmental—which focus on understanding and appreciating how culture produces experience, value, and meaning. Drawing from disciplines across the humanities, Literature graduate students are trained in modes of interpretation aimed at analyzing and historicizing the social, ethical, and political problems of our time. Our students work comparatively in and across different cultural contexts, diverse geographical and geopolitical locations, and distinct media forms to develop their research projects in several disciplinary areas, amongst which:

- critical and social theory and the history of philosophy
- modern literature and contemporary theories and philosophies of language and literature
- visual culture, global cinema, and film theory, the internet and media studies in the digital age
- political and decolonial theory, Marxism, poststructuralism, and postcolonial studies
- psychoanalysis, science studies, cognitive neuroscience, and the history of psychiatry
- comparative race studies in a transnational frame
- feminism, gender, queer and trans theory, and sexuality studies.

The program offers courses in these areas, both introductory courses (at the 500 level), more specialized seminars (at the 600-800 level), as well as seminars and tutorials in specific research projects or problems (890S and 890T). For additional information, visit literature.duke.edu/graduate.

Dual Degree – JD/PhD in Literature

A JD/PhD in Literature is offered by the department in cooperation with Duke's Law School. JD/PhD students must apply for admission to Duke's Law School and the Graduate School and must combine relevant coursework in Literature with full-time work toward a law degree. The Duke University Graduate School and the School of Law are revising the joint degree JD/PhD program. New applications are not being accepted until further notice.

Dual Degree – JD/MA in Literature

A JD/MA degree is offered by the department in cooperation with Duke's Law School. JD/MA students must apply for admission to Duke's Law School and must combine relevant coursework in Literature with full-time work toward a law degree. The Duke University Graduate School and the School of Law are revising the joint degree JD/MA and JD/MS degree programs.

Academic Requirements

All Literature graduate students are required to complete the following requirements:

- a total of 12 graduate courses (500-level or above):
    - 7 of these courses must be offered by primary faculty in Literature (one of which will be a "cohort" course offered in the fall semester, assigned for the entering cohort each year; and another a Doctoral Exam Preparation independent study to be completed in the spring semester of the second year)
    - and 5 of these must create a coherent teaching field of the student's choice
- a preliminary examination in two major fields of study to be conducted in year three, which includes the following:
    - a dossier comprised of a Teaching Field Reading List, a Dissertation Field Reading List, two fully developed syllabi (an introductory survey of the teaching field and an advanced undergraduate course on current debates in the teaching field), as well as a list of sample exam prompts
    - two 48h written exams (one a Teaching Field Exam, and another a Dissertation Field Exam)
    - and a 2-hour oral exam on all the aforementioned materials conducted with the student's Preliminary Exam Committee
- a chapter workshop in year four, which focuses on a concrete piece of writing representing a substantial chapter students will have written, in conjunction with an outline and prospectus for the rest of the dissertation project
- and a final dissertation project, and its defense (usually by year six), which is expected to be a mature and competent piece of the student's writing, embodying the results of significant and original research. In Literature, the general expectation is for the dissertation to be composed of 3 or 4 main chapters, plus an introduction and conclusion, with a total page count (including a bibliography) of around 270 pages (plus or minus 70 pages).

Students entering the program are strongly advised to have a reading knowledge of one language other than English and to acquire reading competence in a second language relevant to their field of study before taking their preliminary examination.

All matriculating PhD students at Duke University are required to complete 12 hours in Responsible Conduct of Research training in research ethics. Six of these are taken care of by the six-hour RCR orientation at the start of the first year—the remaining six are taken care of by attending three two-hour seminars. Students must complete their RCR training to graduate with the PhD.

Students entering Literature's PhD program with a Master's degree are also required to take a minimum of twelve courses as outlined above, and to satisfy all the other aforementioned requirements.

Marine Science and Conservation PhD

Program Code: G-MSC-PHD
Degree Designation: Doctor of Philosophy
Department: Graduate School
Website: nicholas.duke.edu/academics/doctoral-programs/marine-science-conservation-msc

Program Summary

The Division of Marine Science and Conservation, one of three academic units in the Nicholas School of the Environment, offers graduate study for students wishing to earn a PhD in marine science and conservation. Doctoral students emphasize research as a major part of their degree programs. It is designed to prepare students for careers in university teaching and research or outside of the university involving the application of science to policymaking. The program is designed to ensure that students receive detailed training in either natural or social science while, at the same time, being able to synthesize information from both fields. Applicants are strongly encouraged to contact individual faculty members with whom they wish to work prior to applying to The Graduate School.

Academic Requirements

- Environment 849A (Graduate Seminar and Professional Development)
- Environment 878A (Current Topics in Marine Science and Conservation)
- Environment 876A (Data and Time-series Analysis in Marine Sciences)
- Environment 773A (Marine Ecology)
- Environment 860SA (Political Ecology)
- Environment 887A (Theories and Methods for Policy Analysis of the Commons) or approved substitute

Materials Science and Engineering PhD

Program Code: G-MSEG-PHD
Degree Designation: Doctor of Philosophy
Department: Pratt School of Engineering, Trinity College of Arts & Sciences
Website: dmi.duke.edu/degrees/phd

Program Summary

The University Program in Materials Science and Engineering (MatSci) is a multi-disciplinary graduate program that resides within the Graduate School. This multi-department program is designed to accommodate PhD students from a variety of disciplinary backgrounds and to help create a thriving materials community across campus through shared curricular experiences. Participating departments from Pratt School of Engineering and Trinity College of Arts & Sciences include Biology, Biomedical Engineering, Chemistry, Civil and Environmental Engineering, Electrical and Computer Engineering, Mathematics, Mechanical Engineering and Materials Science, and Physics. The research areas of emphasis in the MatSci Program include soft matter and biomaterials, computational materials science, metamaterials, energy materials, electronic/photonic/quantum materials, and sustainable materials. In addition, the potential for unique exposure and access to the School of Medicine, the Sanford School of Public Policy, the Nicholas Institute for Energy, Environment & Sustainability, and the Innovation & Entrepreneurship Initiative can provide the resources needed for students to chart their own paths. Information about the graduate program may be found on the MatSci website.

Academic Requirements

At least thirty-course credits are required for students with a bachelor's degree to receive graduate degrees in the MatSci Program. Core courses (3 or 4 credits each) are required to cover fundamentals and to prepare for research with MatSci affiliated faculty. These core courses should be taken in the first year and must be selected from nine options. PhD students may select four to six courses (up to 2 of the six core courses may be replaced by courses deemed critical by advisors and students for their research projects). In addition to the minimum of 18 course credits from the core courses, a three-semester seminar course (3 credits total) and three elective courses (3 or 4 credits each) are required, all of which should be completed within the second year for a minimum of 30 course credits. The elective courses must be approved by the Director of Graduate Studies. A maximum of one elective course may be replaced with an independent study to receive course credit for research. In the case of PhD students matriculating with a master's degree, course credit requirements are reduced to 21 credits, and the selection of courses must be approved by the Director of Graduate Studies. Academic Integrity and Responsible Conduct of Research training is required by The Graduate School: 12 hours for PhD students.

Core Courses

- CHEM 548: Solid State/Materials Chemistry (Fall)
- CHEM 544: Statistical Mechanics (Fall) or ECE 521: Quantum Mechanics (Fall)
- ME 562: Materials Synthesis & Processing (Fall)
- ME 511: Computational Materials Science (Spring)
- ME 563: Fundamentals of Soft Matter (Spring)
- ECE 721/ME 711: Nanotechnology Materials Lab (Spring) or PHYS 670: Experimental Methods in Condensed Matter Physics (Spring) or ECE 511: Found. of Nanoscale Sci. & Technology (Spring)

Seminar Course

ME 560S: Materials Science and Engineering Seminar (3 semesters)

Elective Courses

Choose three electives. Must be approved by the Director of Graduate Studies.

PhD Qualifying Exam

The qualifying exam should be taken during the third semester of study and is administered by a Graduate Exam Committee. The exam score is a composite based on grades earned in the core courses, a poster presentation describing the relevance of a current research project to content learned in the core courses, and a three-page poster abstract. In the case of a failed exam, the Graduate Exam Committee will determine the appropriate action that should be taken by the student.

PhD Preliminary Exam

The preliminary exam is taken before the end of the sixth semester of study. The preliminary committee should comprise four or five committee members, three of whom are required to be affiliated with the University Program in MSE. The preliminary report and presentation will propose a research plan for completion of the PhD.

PhD Defense

The PhD defense committee membership follows the same rules as the preliminary exam.

Mathematics PhD

Program Code: G-MATH-PHD
Degree Designation: Doctor of Philosophy
Department: Mathematics Department
Website: math.duke.edu/graduate

Program Summary

The Department of Mathematics offers graduate work leading to the PhD in mathematics.

The department offers research training in both pure and applied mathematics. Major areas of research specialization include algebra and algebraic geometry, number theory, geometry, topology, differential geometry and mathematical physics, analysis and partial differential equations, probability and stochastic processes, applied mathematics and mathematical modeling, mathematical biology, scientific computing, numerical analysis, data science and machine learning.

Further details concerning the department, the graduate program, admissions, facilities, the faculty and their research, and financial support may be obtained from the department's website. For inquiries, email the director of graduate studies at phd-program@math.duke.edu.

Academic Requirements

Admission to this program is based on the applicant's academic record, level of preparation for graduate study, research experiences, and letters of recommendation.

All PhD students must pass a breadth requirement based on taking four qualifying courses in three out of five core areas of mathematics in their first year. Before the end of the third year in the program, students will have selected a research advisor and pass an oral preliminary examination on their preparation and planned direction for their thesis. The written dissertation and thesis defense are the final requirements for the PhD.

Mechanical Engineering and Materials Science PhD

Program Code: G-ME-PHD
Degree Designation: Doctor of Philosophy
Department: Mechanical Engineering & Materials Science Department
Website: mems.duke.edu/phd

Program Summary

The department offers programs of study and research leading to the MS and PhD in mechanical engineering and materials science. The department's broad areas of concentration include aerodynamics and aeroelasticity, autonomous systems, biomechanics and biomaterials, computation and artificial intelligence, energy systems and materials, and soft matter and nanoscale materials. MS and PhD programs of study are highly flexible to meet individual needs.

Academic Requirements

Duke MEMS provides a customized, flexible educational experience tailored to meet your needs in your chosen research area. In our program, you will progress from introductory classes to specialized coursework. As you learn, your focus will gradually shift from coursework to learning important research and leadership skills.

- 6-8 core courses, depending on your chosen curriculum
- Coursework-based Preliminary Exam in your 2nd year
- Research-based Research Proposal Defense in your 3rd year
- Complete Responsible Conduct of Research (RCR) training
- Complete two semesters of teaching assistantship
- Complete and defend a dissertation
- During their training, many students also complete certificates and/or internships

Medical Physics PhD

Program Code: G-MPH-PHD
Degree Designation: Doctor of Philosophy
Department: Medical Physics
Website: medicalphysics.duke.edu

Program Summary

Medical physics is a field that applies principles of physics to the clinical needs of medicine and healthcare. It has been instrumental in the development of the medical fields of radiology, radiation oncology, and nuclear medicine. The Medical Physics Program offers both an MS and a PhD degree, organized into four academic tracks: diagnostic imaging physics, radiation oncology physics, nuclear medicine physics, and medical health physics. Graduates are trained for employment opportunities in academic settings, clinical service, industry, government labs, and consulting.

The Medical Physics Program is a collaborative interdisciplinary program with faculty from the Departments of Radiology, Radiation Oncology, Occupational and Environmental Safety (health physics), Biomedical and Electrical Engineering, and Physics with current research interests focused on: magnetic resonance imaging and microscopy, advanced digital imaging instrumentation and algorithms, detector and display characterization, computer-aided diagnosis, ultrasound, monoclonal antibody imaging and therapy, intensity modulated radiation therapy, on-board imaging in radiation therapy, SPECT and PET imaging, neutron and X-ray scatter imaging, radiomics and big-data, machine learning, and dosimetry.

The Duke Medical Physics program is accredited by the Council on Accreditation of Medical Physics Educational Programs (CAMPEP).

Academic Requirements

All students take core courses focused on topics from all four academic tracks in the first year, followed by concentration-specific courses in their chosen major track of study, which includes practical clinical training and more advanced didactic courses. PhD students pursue substantial dissertation research during their education.

Medical Scientist Training PhD

Program Code: G-MST-PHD
Degree Designation: Doctor of Philosophy
Department: Graduate School
Website: medschool.duke.edu/education/health-professions-education-programs/medical-scientist-training-program-mdphd

Program Summary

The Medical Scientist Training Program (MSTP), administered under the auspices of The Graduate School and the School of Medicine, is designed for students with strong backgrounds in science who are interested in careers in the medical sciences and academic medicine. The program combines graduate education in the trainee's chosen field of study with the clinical curriculum of the School of Medicine. Most trainees pursue a PhD in the biomedical sciences but others pursue degrees in medically relevant social sciences. Completion of the program typically requires seven to eight years of study and leads to both the MD and PhD. The combination of scientific and clinical training affords a remarkable range of career opportunities for program graduates, who generally follow one of two broad paths: Some pursue careers in teaching and research in one of the basic medical sciences; others enter residency programs and then go on to investigative and teaching careers in clinical medicine. Most graduates pursue some combination of research and clinical work.

Eligibility

Applicants must meet both The Graduate School PhD admission requirements and the School of Medicine MD admission requirements. Application and acceptance to the School of Medicine is requisite for admission to the MSTP. Most students apply for admission to the MSTP concurrent with application to first year of the MD program, but a few students are admitted each year after completing the second or third year of the School of Medicine. In addition to the minimum requirements for acceptance into The Graduate School and the School of Medicine, advanced coursework in science and mathematics and significant prior research experience are key elements in the selection of new students. Evidence of the potential for serious investigative work as a physician-scientist is essential. Because a significant portion of the program's funding is provided by a National Institutes of Health training grant, program participants must be US citizens or official permanent residents of the United States.

The Training Program

Duke University School of Medicine's unique third-year research curriculum is well suited for dual-degree programs. The third year of medical school is essentially the first year of the PhD program, an arrangement that shortens the time-to-degree for the dual-degree student by a year. The typical student spends the first two years in medical school, followed by four to five years in a PhD program (which substitutes for the third medical school year) and, finally, returns to a fourth year of medical school. The coursework in the first medical school year provides a solid foundation in the basic medical sciences. The second year is devoted to a clinical sciences curriculum. Following completion of the second year, the trainee enters a graduate program to complete requirements for the PhD. A final academic year of elective clinical study completes the requirements for the MD degree.

The typical student follows the plan outlined above, but students whose research interests are well developed early in the first year may opt to begin the PhD at the beginning of their second year and then complete the clinical sciences curriculum after finishing the PhD. While this is not the typical sequence, considerable latitude is granted to students interested in early research experiences.

Financial Support

All students admitted to the program receive a full fellowship award: tuition, fees, health insurance, and a stipend to cover living expenses. The stipend for 2022-2023 was $33,605 for a twelve-month year. The award increases each year to match increases in fees, tuition, and living expenses. The program provides fellowship funds for the three medical school years and the first twenty-two months of enrollment in the PhD program; the PhD mentor provides financial support in the upper-level PhD years. Tuition for the third year of medical school is forgiven for MSTP students who 1) enter the program prior to the third year of medical school and 2) subsequently complete the PhD. Likewise, financial support for the fourth medical school year is contingent upon completion of the PhD, and, in order to qualify for this support in the last medical school year, the student must complete the PhD within seven years of the end of the second medical school year. Because MSTP fellowship support is intended to enable students to devote full-time to their work toward the two degrees, all years of fellowship support are contingent upon enrollment in either the School of Medicine or The Graduate School, satisfactory progress toward the two degrees, and no gainful employment.

Additional information may be obtained by contacting the program office directly: Medical Scientist Training Program, (919) 668-5528; MSTP@duke.edu.

Academic Requirements

Year 1 — Core Basic Science Year

This year consists of four integrated basic science courses: Molecules and Cells, Normal Body, Brain and Behavior, and Body and Disease. The students also participate in Clinical Skills Foundation, which runs throughout the year. More information is available at medschool.duke.edu/education/health-professions-education/doctor-medicine-md-program/curriculum/1st-year.

Year 2 — Core Clinical Science Year

The second year consists of an Orientation to the Patient Safety and Clinical Year (OPSCY), eight core clerkship rotations, a Health Policy/Global Health course, two Selective periods, the Clinical Skills Course, and a summative Clinical Skills assessment. The goals of the core clerkships include developing students' skills in accurate patient-based problem-solving and appropriate use of resources to diagnose and treat patients. More information is available at medschool.duke.edu/education/health-professions-education/doctor-medicine-md-program/curriculum/2nd-year.

Years 3, 4, 5, 6 — The Graduate Years

During the third, fourth, fifth and sixth years of the program, the trainee pursues graduate study to satisfy the requirements for the PhD degree. These requirements include: completion of necessary course work, adequate performance in the preliminary examination, original research suitable for a dissertation, and successful defense of the thesis in the final examination. Detailed descriptions of the other general requirements for the PhD degree are stated in the Bulletin of the Graduate School.

The graduate curriculum of each trainee is developed in consultation with the director of graduate studies of the department in which the trainee elects to study and requires the approval of the Medical Scientist Training Program Committee.

Descriptions of the graduate courses in the Departments of Biochemistry, Cell Biology, Molecular Genetics and Microbiology, Immunology, Molecular Cancer Biology, Neurobiology, Pathology, Pharmacology and Cancer Biology, Biomedical Engineering, Chemistry, and Biology and the programs Computational Biology and Bioinformatics and the University Program in Genetics and Genomics are listed in the Bulletin of the Graduate School. Trainees are encouraged to select courses which relate to their individual interests rather than follow a prescribed curriculum applied to all students in a given discipline. Such range, flexibility, and freedom are the essence of graduate education. The original research and dissertation of each trainee is supervised by a faculty adviser

chosen by the trainee in consultation with the director of graduate studies in the appropriate department/program. Progress is monitored by a thesis committee selected by the student in consultation with the thesis mentor. This committee generally administers the preliminary examination before the student commences original research and the final examination after the student completes the dissertation.

During the PhD years MSTP students can participate in non-credit continuity clinics that meet one afternoon a week. MSTP students also enroll, during the fourth year, in a one-month continuity clinic for which they receive credit.

Final Year — An Elective Year in Clinical Science

In this year, which is entered only after completion of all requirements for the PhD degree, the student and their medical school advisory dean construct an individualized curriculum which often places major emphasis on one clinical area and minor emphasis on other fields. In addition to several electives of their choice, students are required to complete a subinternship, a critical care selective, a continuity clinic, and a final capstone course. More information is available at medschool.duke.edu/education/health-professions-education/doctor-medicine-md-program/curriculum/fourth-year.

Molecular Cancer Biology PhD

Program Code: G-MCB-PHD
Degree Designation: Doctor of Philosophy
Department: Molecular Cancer Biology Department
Website: pcb.duke.edu/education-training/molecular-cancer-biology-phd-program

Program Summary

Molecular cancer biologists at Duke University seek to understand the complex regulatory mechanisms that govern mammalian cell growth and differentiation, discern how these mechanisms are perturbed in malignant cells, and how our knowledge of these regulatory mechanisms might lead to improved anti-cancer therapy. This research covers the boundaries of disciplines such as pharmacology, biochemistry, molecular biology, genetics, genomics, and cell biology, which together are leading to a greater understanding of the basic mechanisms underlying growth regulation and their alterations during tumor progression and metastasis.

The Program in Molecular Cancer Biology (MCB) includes faculty from multiple participating departments and centers across Duke University and Duke School of Medicine. Program scientists are actively engaged in dissecting the regulatory networks that control the processes of growth and development at the cellular and molecular levels, and identifying the defects that lead to oncogenic transformation. The approaches used by the investigators include genomics, genetics, cell biology, molecular biology, and protein biochemistry. The ultimate goal is to identify novel candidates for therapeutic intervention in the treatment of cancer. Graduate training in this program is greatly enhanced by the collaborative interactions among investigators across the University and the School of Medicine.

Academic Requirements

The Department of Pharmacology and Cancer Biology requires that Pharmacology and Molecular Cancer Biology students have a minimum of 30 graded units to obtain a degree.

First and second semester courses

In the first and second semesters, students take a combination of mini (half-semester) courses and full courses selected in consultation with the Director of Graduate Studies and additional faculty as appropriate. The first year curriculum is designed to complement and extend the student's undergraduate training and prepare the student for subsequent courses. The course load expected is the equivalent to 2.5 to 3 full courses in the first semester, and 2 to 2.5 full courses in the second. Among highly recommended courses for the first semester are CMB 710 Cellular and Molecular Biology modular courses, PHARM 533 Essentials of Pharmacology & Toxicology, and UPGEN 778 Genetic Approaches to the Solution of Biological Problems. A grant writing course (BIOTRAIN 720) is offered in the Fall semester and is typically taken by students in the beginning of the second year.

Course Requirements

- MOLCAN 780 – Seminar – 4 Semesters
- MOLCAN 818 – Cancer Biology II/ Molecular Mechanisms of Oncogenesis
- MOLCAN 819 – Cancer as a disease
- MOLCAN/PHARM 733 – Experimental Design and Biostatistics for Basic Biomedical Scientists (Note that this required course does not have to be taken before the preliminary exam).

Medical Scientist Training Program (MSTP) students and other non-degree granting programs students joining the MCB program may have differing course requirements.

Additional Requirements

- Responsible Conduct of Research (RCR) Training Requirement (18 hours total). Requirements and details can be found here.
- Laboratory Research. Students complete 4 rotations with different faculty members to select an advisor.
- Preliminary Exam
- Formation of the Thesis Committee

- Thesis Requirements

Molecular Genetics and Microbiology PhD

Program Code: G-MGM-PHD
Degree Designation: Doctor of Philosophy
Department: Molecular Genetics & Microbiology
Website: mgm.duke.edu

Program Summary

The Department of Molecular Genetics and Microbiology offers a range of opportunities for training in the use of molecular and genetic tools to solve biological problems. Current research interests are focused in microbial pathogenesis, RNA biology, virology, and experimental genetics and genomics. Members of the department use a wide variety of experimental approaches (e.g., classical genetics, generation of transgenic animals, tissue culture models) and study a diversity of organisms (budding yeast, Cryptococcus, fruit flies, worms, zebrafish, and humans).

The department is extremely interactive. In addition to coursework, students participate in a number of activities that enhance their training and facilitate interaction with each other, as well as with post-doctoral fellows and faculty.

Academic Requirements

Course Requirements

Students need to have 24 credits completed by the end of their second year:

- **Basic Lecture Courses**
  - MGM 778 Genetic Solutions to Biological Problems (6 credits)
  - CMB 551 Cell and Molecular Biology core course (6 credits)
  - Core Elective: MGM 552 Virology or MGM 582 Microbial Pathogenesis or MGM 732 Human Genetics (3 credits)
  - BIOTRAIN 720 Scientific Writing/ Writing Grant Proposals (3 credits)
  - two courses of choice (5 credits total)
  - A total of 12 modules are taken in a combination of UPGEN 778 and CMB 710. At least 6 need to be UPGEN 778 except for 2nd year entering students in which case, 4 must be UPGEN 778
  - All students supported by the Viral Oncology Training Grant are required to take MGM 552 (Virology and Viral Oncology).
- **Student Seminar Courses**
  - MGM 790S: Topics in Molecular Genetics and Microbiology, required for first six semesters (1 credit/semester = Total of 6 credits)
  - MGM 701: Foundations of MGM for the first year students (1 credit)
  - MGM students attend the MGM-sponsored Thursday Seminar Series, the Monday Department Research Seminars and our annual MGM Scientific Retreat.
  - MGM students are highly encouraged to attend the UPGG-sponsored Tuesday Seminar Series when an MGM faculty member is hosting or speaking.
- **Suggested Electives**
  - PHARM 733 Biostastics (2 credits)
  - IMMUNOL 601 Immunology of Human Diseases (3 credits)
  - IMMUNOL 544 Principles of Immunology (3 credits, if no prior background)
  - MGM 778 Genetic Solutions to Biological Problems (4 credits, additional semester of genetic modular course)
  - MGM 522 Critical Readings in Genetics (3 credits)
  - MGM 703 Infection Biology (3 credits)
  - MGM 720 NGS Computational Tools (3 credits)
- **Responsible Conduct of Research (RCR).** All Molecular Genetics and Microbiology matriculating PhD students are required to complete 18 contact hours of RCR training in the first four years of their study. The RCR Requirements can be found on The Duke Graduate School website.

Additional Requirements

- **Lab rotations.** Each MGM student is required to conduct three laboratory rotations. Each rotation is 10-12 weeks long. The rotations are time-coordinated, i.e. all rotations begin and end at the same time:
- **Mentoring.** The students will meet with the DGS each semester of their first two years. These meetings are an opportunity for students to obtain information regarding electives, to discuss progress in the classroom, and to discuss rotations and progress in the laboratory.
- **Preliminary examination**
- **Thesis defense**

Music PhD

Program Code: G-MUS-PHD
Degree Designation: Doctor of Philosophy
Department: Music Department
Website: music.duke.edu/graduate

Program Summary

The Department of Music offers graduate programs leading to the PhD in composition, the PhD in ethnomusicology, and the PhD in musicology. It also offers the MA in performance practice as an alternative part of the PhD in musicology.

Applicants for admission to all degree programs will normally have a broad liberal arts background as well as demonstrable musical competence. Those applying to the composition program should submit samples of their compositions with their applications. Applicants for musicology and ethnomusicology should include samples of their writing on musical topics. Upon acceptance to the university, by nomination of the graduate faculty in music, musicology students may also be admitted to the Program in Medieval and Renaissance Studies. For students pursuing the musicology PhD with an emphasis in performance practice, the department encourages applications from advanced performing musicians who have demonstrated the ability to conduct research in historically informed performance. Applicants in this track should submit a recording of their work in addition to a sample of their writing.

A more detailed description of each degree program is available upon request from the director of graduate studies. For additional information visit the website.

Academic Requirements

For the **PhD in composition**, seventeen courses (51 course credits) are required; up to four courses (12 course credits) may be accepted for transfer from another institution. Courses may be taken in other departments with permission of the director of graduate studies. Students are expected to pass a qualifying examination in the fourth semester and a preliminary examination, after completing coursework, usually in the sixth semester. Students submit a portfolio of compositions, an annotated course syllabus, and proposals for the dissertation composition and article before taking the preliminary examination. Students in composition must also demonstrate reading knowledge of one foreign language. The dissertation requirements consist of a large-scale composition and an article of publishable quality.

For the **PhD in musicology**, seventeen courses (51 course credits) are required; up to four courses (12 course credits) may be accepted for transfer from another institution. Courses may be taken in other departments with permission of the director of graduate studies. Students are expected to pass a two-part qualifying examination (major field examination and comprehensive examination) in the fourth and fifth semesters and a preliminary examination after completing coursework, usually in the sixth semester. Additionally, students must demonstrate reading knowledge of two foreign languages. Within the framework of the musicology degree, students may pursue projects in music theory or performance practice.

For the **MA in performance practice**, eleven courses (33 course credits) are required. Students are expected to pass a qualifying examination (major field examination and comprehensive exam) in the fourth and fifth semesters and to give a master's recital, usually toward the end of the first year. They must also demonstrate reading knowledge of one foreign language. Also, students must demonstrate reading knowledge of one foreign language. The MA in performance practice is not a terminal degree; it is granted only to candidates who matriculated into the PhD in musicology.

For the **PhD in ethnomusicology**, fifteen courses (45 course credits) are required, including three core courses. Of the twelve additional courses, at least four should be taken in the Duke Music Department and three in another single discipline. Students are expected to prepare a portfolio of their work for yearly assessments: a mini-portfolio at the end of year 1, the field specialization workshop at the end of year 2, and the portfolio and prospectus workshop (preliminary examination) after course requirements at the end of year 3. Students must also demonstrate reading knowledge of one foreign language.

Neurobiology PhD

Program Code: G-NEUR-PHD
Degree Designation: Doctor of Philosophy
Department: Neurobiology Department
Website: neuro.duke.edu/education/graduate-training-program-0

Program Summary

At a time when many questions in biology have been eloquently answered, both scientists and the public correctly perceive that the brain remains, in fundamental ways, a profound mystery. During the last century, tremendous advances have been made in understanding the structure, function, chemistry, and development of the brain. Nonetheless, in both biology and medicine, broad and important questions about this complex organ remain to be answered. These include how genetic instructions are linked to brain development, the basis of learning and memory, the nature of consciousness, and the etiology and proper treatment of neurological diseases such as epilepsy, neurodegenerative diseases such as Alzheimer’s and Parkinson’s, and neurodevelopmental disorders such as autism.

Neurobiologists approach the questions of how the brain works with techniques that are diverse, and generally reductionist. Pre-eminent are a host of sophisticated imaging and electrophysiological methods for detecting the activity of individual nerve cells or groups of nerve cells, extremely novel applications of the techniques of molecular biology and molecular genetics, and a wealth of anatomical methods for seeing the structure and connections

of nerve cells. Noninvasive means of recording activity in the human nervous system—by functional nuclear magnetic resonance (fMRI), positron emission tomography (PET), or activity-related magnetic fields—also hold great promise for better understanding the brain. Still, progress in neurobiology—much as progress in any science—will depend on important insights arising from the imagination of neuroscientists who think deeply about these issues.

Neuroscience at Duke is pursued in a variety of departments and settings, all of which are possible sites for students who wish to be trained in this field. The Graduate Training Program has its home in the Department of Neurobiology at Duke University Medical Center, and includes forty-six training faculty with primary appointments in fifteen different departments in the School of Medicine, the Trinity College of Arts & Sciences, and the Pratt School of Engineering. A large and diverse body of students and other professionals are also engaged in neurobiological research.

Academic Requirements

Students in the graduate program take a core curriculum that covers the major subfields of contemporary neurobiology, but students are generally free to pursue—with the help of faculty advisors—a course of study tailored to their needs, backgrounds, and individual interests. The core courses in the Department of Neurobiology are:

- Neurobiology 710 (Scientific Writing)
- Neurobiology 719 (Concepts in Neuroscience I)
- Neurobiology 720 (Concepts in Neuroscience II)
- Neurobiology 726 (Neurobiology Journal Club)
- Neurobiology 733 (Experimental Design and Biostatistics for Basic Biomedical Scientists)
- Neurobiology 735 (Quantitative Approaches to Neurobiology)
- Neurobiology 751 (Neuroscience Bootcamp)
- Neurobiology 762 (Neurobiology of Disease)
- Neurobiology 790 (Student Seminar)

Nursing PhD

Program Code: G-NUR-PHD
Degree Designation: Doctor of Philosophy
Department: School of Nursing
Website: nursing.duke.edu/academic-programs/phd-program-nursing

Program Summary

The PhD Program in Nursing prepares nurse scholars who will advance nursing science and promote equitable health outcomes and care systems, with a focus on social determinants of health (SDOH). Students will acquire the knowledge and skills necessary to design, implement, and evaluate innovative models of care that improve health outcomes across diverse populations. Graduates of the program will be prepared to lead and transform nursing practice, policy, and research to promote health equity and social justice. PhD student tuition and 12-month stipends are fully funded for up to five years.

At Duke University School of Nursing, we admit a small number of highly qualified, diverse applicants that work closely with one or more faculty members in a series of mentored experiences supported by formal coursework.

A baccalaureate or master's degree in nursing from a program accredited by ACEN or CCNE is required for admission to the PhD in nursing program.

The PhD program is administered by and follows the policies of The Graduate School.

For additional information about the PhD in nursing program and curriculum details, consult nursing.duke.edu/academic-programs/phd-program-nursing. Prospective students may also contact the PhD Program Coordinator at (919) 684-8456 or cmhoglen@duke.edu.

Academic Requirements

The PhD Program in Nursing requires a minimum of 52 credit hours of graduate coursework. Students will work on research projects; it is expected most will graduate with several publications. Coursework is structured with a substantive core of nursing science and research methods to be taken in the School of Nursing. This core is expanded with elective courses that typically support the student's dissertation and future research career. These can be taken in other Duke University departments or other Universities that have an arrangement with Duke (e.g., University of North Carolina at Chapel Hill, North Carolina State University, North Carolina Central University). Additional requirements include research practicums and elective credits that may count towards specialty certificates (e.g., teaching, global health, data science, entrepreneurship, etc.).

In addition to course work, the PhD Program in Nursing will require each student to develop a scholarly portfolio, successful completion of a preliminary examination, and a dissertation. Students are expected to disseminate their work through scholarly venues such as publications and conference presentations.

PhD Program in Nursing Plan of Studies

Required Courses by Semester	Credit Hours
YEAR 1 FALL (TOTAL)	**12**
Nursing 901 (Philosophy of Science & Theory Development)	3
Nursing 902 (Quantitative Research Methods and Designs)	3
Nursing 907A (Doctoral Seminar on Health Equity and Social Determinants of Health I: Synthesis Review)	3
Nursing 911 (Introductory Statistics)	3
YEAR 1 SPRING (TOTAL)	**9**
Nursing 903 (The General Linear Models)	3
Nursing 906 (Qualitative Research Methodology)	3
Nursing 908A (Doctoral Seminar on Health Equity and Social Determinants of Health II: Grant Writing)	3
YEAR 2 FALL (TOTAL)	**12**
Nursing 905 (Longitudinal Methods)	3
Nursing 909 (intervention Research Methods)	3
Elective (any semester)	3
Elective (any semester)	3
YEAR 2 SPRING (TOTAL)	**13**
Nursing 921 (Integrated Research Practicum -- any semester)	1
Nursing 741 (Facilitating Student Learning and Teaching Innovation) (any semester)	3
Elective (any semester)	3
Elective (any semester)	3
Elective (any semester)	3
YEAR 3 FALL (TOTAL)	**6**
Nursing 910 (Doctoral Seminar in Nursing Science Dissertation)	3
Nursing 744 (Implementing the Nurse Educator Role: Synthesis) (any semester)	2
Nursing 918 (Leadership in Science: The Role of the Nurse Scientist)	1
YEAR 3 SPRING (TOTAL)	**0**
Dissertation	0
YEAR 4 (OPTIONAL)	
Total Program Credit Hours (minimum requirement)	**52**

Pathobiology and Translational Biosciences PhD

Program Code: G-PATB-PHD
Degree Designation: Doctor of Philosophy
Department: Pathology Department
Website: pathology.duke.edu/education/phd-graduate-program

Program Summary

The PhD program in the Department of Pathology is designed to train students for research and teaching careers in molecular medicine, experimental pathology and translational sciences. Coursework aims to provide a clear understanding of disease processes, while focusing on modern molecular approaches to understanding and treating human disease. Research in the department covers the broad areas of inflammation, infectious diseases and vaccine design, tumor biology, and vascular biology in a multidisciplinary fashion, involving both basic scientists and clinician researchers.

Many of our students are also members of interdepartmental programs: Cell and Molecular Biology, Integrated Program in Toxicology, and the Medical Scientist Training (MD-PhD) program. These programs encourage access to researchers throughout the University and facilitate the interdisciplinary studies that have proven so successful at Duke.

Further information can be obtained from the director of graduate studies or from the departmental website.

Academic Requirements

Typically four or five years are required to complete the PhD; the first two years being primarily devoted to coursework and the remaining to full-time dissertation research.

During the first and second years, suggested courses include core courses in histology and pathology, a departmental course on molecular aspects of disease, and various elective courses offered by the different Basic Science Graduate Programs at Duke. Mandatory core courses are comprised of the following:

- PATHOL 787D. Basic Biology of Cells as a Function of Age; Implication for Disease
- PATHOL 725. Introduction to Systemic Histology
- PATHOL 735S. Animal Models in Translational Research
- PATHOL 750. General Pathology
- PATHOL 785. Molecular Aspects of Disease
- PATHOL 786. Translational Aspects of Pathobiology
- PATHOL 855. Graduate Student Seminar
- **Elective Courses**. A wide range of electives are offered to our graduate students to select from. Students usually take 8 - 12 units of courses per semester in Years 1 and 2. Popular electives include:
    - IMMUNOL 544. Principles of Immunology
    - CELLBIO 760. Cellular Signaling
    - CMB 778. Genetic Approaches to the Solution of Biological Problems
    - MOLCAN 819. Cancer as a Disease

During their third year, the student takes a preliminary exam and advances to candidacy for the PhD degree. Dissertation work culminates in a written dissertation that the student defends orally before their PhD advisory committee.

Pharmacology PhD

Program Code: G-PHAR-PHD
Degree Designation: Doctor of Philosophy
Department: Pharmacology Department
Website: pcb.duke.edu/education-training/pharmacology-phd-program

Program Summary

The Department of Pharmacology and Cancer Biology offers graduate work leading to the PhD in pharmacology.

Pharmacology is the science of drug action on biological systems. It encompasses the study of targets of drug action, the mechanisms by which drugs act, the therapeutic and toxic effects of drugs, as well as the development of new therapeutic agents. As the study of pharmacology is interdisciplinary, the graduate Program in Pharmacology is diverse and flexible. The focus of the graduate Program in Pharmacology is to prepare qualified individuals for a career in independent research. The department currently has twenty-five primary faculty and thirty-one secondary faculty with primary appointments in departments such as molecular genetics and microbiology, cell biology, cardiology, medicine, and neurobiology. The collaborative and collegial atmosphere between faculty and students provides a wide diversity of research opportunities.

Academic Requirements

The Department of Pharmacology and Cancer Biology requires that Pharmacology and Molecular Cancer Biology students have a minimum of 30 graded units to obtain a degree.

PHARM Course Requirements

- PHARM 780 – Seminar – 4 Semesters
- PHARM 533 – Essentials of Pharmacology/Toxicology
- PHARM 835 – Innovations in Drug Development
- PHARM 733 – Experimental Design and Biostatistics for Basic Biomedical Scientists (Note that this required course does not have to be taken before the preliminary exam).

Medical Scientist Training Program (MSTP) students and other non-degree granting programs students joining the Pharmacology program may have differing course requirements.

Recommended electives for PHARM include:

- BIOTRAIN 720 – Grant Writing
- CMB 710 – Cell and Molecular Biology Modules
- PATHOL 725 – Pathology

Additional Requirements

- Responsible Conduct of Research (RCR) Training Requirement (18 hours total). Requirements and details can be found here.
- Laboratory Research. Students complete 4 rotations with different faculty members to select an advisor.
- Preliminary Exam
- Formation of the Thesis Committee
- Thesis Requirements

Philosophy PhD

Program Code: G-PHIL-PHD
Degree Designation: Doctor of Philosophy
Department: Philosophy Department
Website: philosophy.duke.edu/graduate

Program Summary

Our doctoral program offers considerable flexibility; individual programs of study are developed for each student. Students may also take advantage of cooperative program to work in the Philosophy Department at the University of North Carolina at Chapel Hill. Students may, after taking a balanced program, specialize in any of the following fields: the history of philosophy (from ancient to twentieth century analytic), epistemology, metaphysics, philosophy of language, philosophy of mind, the philosophical foundations of cognitive science, moral psychology, normative ethics, metaethics, political philosophy, Chinese philosophy, philosophy of science, philosophy of biology, philosophy of social science, philosophy of law, philosophy of mathematics, and philosophical logic.

Individual programs of study are developed for each student. Prior to being admitted to candidacy for the PhD, the student must successfully complete fifteen courses distributed among five subject areas and pass an exam on a future research statement as well as a preliminary examination on the dissertation proposal. In satisfying these requirements, students are expected to demonstrate both factual knowledge and critical understanding. Work in a minor or related field, not necessarily confined to any one department, is encouraged but not required.

If a student's dissertation is devoted to any considerable extent to an author, that student must be able to read the author's works in the original language/s. Reading knowledge is demonstrated by either (1) receiving at least a grade of B in French 2, German 2, Greek 2, Latin 2, or other language course that the director of graduate studies has approved in advance, or (2) passing a departmentally administered translation exam.

The JD/PhD is offered by the department in cooperation with the Duke Law School. JD/PhD students must apply for admission to both the Duke Law School and The Graduate School. Students must combine relevant coursework in philosophy with full-time work toward a law degree.

A terminal degree of master of arts may be earned by a PhD student who decides not to continue with doctoral studies and who meets the requirements of The Graduate School for the MA. Such a student must pass an oral master's examination, which may be the defense of a master's thesis or an alternative academic exercise approved by the department.

To inquire about the JD/PhD program, applicants should contact the Duke Law School directly.

Academic Requirements

- 15 courses, with up to 5 courses outside the department. These courses will normally be distributed over 5 semesters, with at least 6 courses completed at the end of the first year.
    - **Area Requirements**
        - 3 **History of Philosophy courses**, including 1 in Ancient and 1 in Modern Philosophy
        - 1 **Philosophy of Science** (philosophy of science, biology, psychology) course
        - 2 courses, selected from **Metaphysics, Epistemology and Philosophy of Mind**, one of which must be the M&E pro-seminar
        - 2 courses, selected from **Value Theory** (ethics, aesthetics, political or social philosophy, and philosophy of Law), one of which must be the ethics pro-seminar
        - 1 **Logic** course, satisfied by passing a logic examination or taking PHIL 250 Symbolic Logic
- Language Requirement - if needed for dissertation work
- Future Research Statement and Oral Examination
- Preliminary Examination
- Dissertation
- Dissertation Defense

Physics PhD

Program Code: G-PHYS-PHD
Degree Designation: Doctor of Philosophy
Department: Physics Department
Website: physics.duke.edu/graduate

Program Summary

The Department of Physics offers graduate work for students wishing to earn a PhD in physics.

In addition to a balanced program of core graduate courses, the department offers specialized courses and seminars in several fields in which research is being done by faculty and staff. With the help of faculty advisors, students select a course program to fit their individual backgrounds and goals, often including work in a related field. Students are encouraged to begin research work early in their careers, normally not later than the end of their first year in the program. Active areas of research include experimental studies in astrophysics, atomic/molecular/optical physics, accelerator physics, biophysics, condensed matter, high energy, nonlinear, nuclear, and quantum information physics, as well as theoretical work in condensed matter, nonlinear, nuclear and particle physics, quantum information, astrophysics, cosmology, and string theory. In addition, the Physics department is a participant in several university-wide and regional research organizations including the Duke Quantum Center, the Center for Theoretical and Mathematical Science, the Triangle Universities Nuclear Laboratory, the Duke Institute for Brain Sciences, the Duke Soft Matter Center, and the Duke Materials Initiative.

Academic Requirements

Requirements for the physics PhD degree include graduate coursework in core subject areas (mathematical methods, classical mechanics, quantum mechanics, statistical mechanics, and electrodynamics) as well as approved electives; preparing for and passing the doctoral preliminary examination (including a proposed PhD thesis research plan); and completion of a doctoral dissertation under the supervision of a faculty advisor.

Political Science PhD

Program Code: G-POLI-PHD
Degree Designation: Doctor of Philosophy
Department: Political Science Department
Website: polisci.duke.edu/graduate/phd

Program Summary

The Department of Political Science offers graduate work leading to the MA and PhD in political science.

Instruction is designed to prepare the student primarily for teaching and research. Instruction is currently offered in the following fields: political economy; behavior and identity; security, peace, and conflict; political methodology; normative political theory and political philosophy; and political institutions.

Further details on the graduate Program in Political Science, the departmental facilities, the staff, and available financial aid may be obtained from the director of graduate studies, Department of Political Science.

Academic Requirements

The candidate for the degree of doctor of philosophy in political science must demonstrate competence in at least two general fields of the discipline by taking four courses in each field. The candidate must also fulfill a methodology requirement, consisting of seven courses; pass a preliminary exam, consisting of the defense of an article-length research paper; and write a satisfactory dissertation.

Population Health Sciences PhD

Program Code: G-PHS-PHD
Degree Designation: Doctor of Philosophy
Department: Population Health Sciences
Website: populationhealth.duke.edu/education/phd-population-health-sciences

Program Summary

The Department of Population Health Sciences develops critically-thinking, creative, and collaborative research scientists that are passionate about improving healthcare for all. The doctoral program equips students with the knowledge and tools they will need to research and work alongside health systems, government agencies, non-profits, industry, and others pursuing improved health of populations.

The Duke Population Health Sciences PhD program prepares researchers to formulate important research questions, design studies to answer them, organize resources to carry out relevant studies, and analyze the results to contribute scientific and policy insights. Our coursework, experimental learning, and professional development help prepare PhD students to be leaders in the population health field.

Academic Requirements

- Year 1
  - Fall: 10 credits (14 with RCR training)
    - POPHS 901: Population Health Science Theories (3 credits)
    - POPHS 905: Population Health Research Design and Systematic Literature Reviews (3 credits)
    - POPHS 907: Population Health Sciences Professional Development (1 credit)
    - POPHS 920: Analytic Methods I: Study Design, Data, and Descriptive Analysis (3 credits)
    - BIOTRAIN 750: Introduction to RCR Concepts (1-day event during orientation prior to classes) (4 RCR credits)
  - Spring: 10 credits (14 with RCR training)
    - POPHS 923: Principles of Health Measurement (3 credits)
    - POPHS 908: Population Health Sciences Professional Development II (1 credit)
    - POPHS 921: Analytic Methods II: Causal Inference (3 credits)
    - POPHS 910: Fundamentals of Qualitative Measurement (3 credits)
    - BIOTRAIN 751: The Responsible Scientist I (4 RCR credits)
- Year 2
  - Fall: 9 credits (11 if RCR training is taken this semester)
    - POPHS 903: Analytic Methods for Population Health Sciences III: Advanced Regression Methods (3 credits)
    - 2 electives (6 credits)
    - BIOTRAIN 753: Data Management and Quality for Biomedical PhD Students (self-paced, online) (2 RCR credits) (can be completed during either year 2 or year 3)
  - Spring: 9 credits (11 if RCR training is taken this semester)
    - POPHS 904: Analytic Methods IV: Advanced Regression Methods II (3 credits)
    - 2 electives (6 credits)
  - May: Comprehensive Exam
- Year 3
  - Fall: 3 credits
    - Dissertation (3 credits)
  - Spring: 3 credits (7 if RCR training is taken this semester)
    - Dissertation (3 credits)
    - BIOTRAIN 754: The Responsible Scientist II (4 RCR credits)(can be completed during either year 3 or year 4)
- Year 4
  - Fall: 3 credits
    - Dissertation (3 credits)
  - Spring: 3 credits (7 if RCR training is taken this semester)
    - Dissertation (3 credits)
    - BIOTRAIN 754: The Responsible Scientist II (4 RCR credits)(can be completed during either year 3 or year 4)
- Year 5 (if applicable)
  - Fall: 3 credits
    - Dissertation (3 credits)
    - 2 RCR elective forums (2 RCR credit hours each)
  - Spring: 3 credits
    - Dissertation (3 credits)

Psychology & Neuroscience PhD

Program Code: G-PSY-PHD
Degree Designation: Doctor of Philosophy
Department: Psychology Department
Website: psychandneuro.duke.edu/graduate

Program Summary

The Department of Psychology offers graduate training leading to the PhD in psychology. This unique program merges social sciences and natural sciences in the study of the brain, behavior, and cognition in humans and animals. Program tracks are offered in clinical psychology, cognition/cognitive neuroscience, developmental psychology, social psychology, and systems and integrative neuroscience.

Academic Requirements

- P&N First Year Seminar, fall and spring of 1st year
- P&N Breadth Course, fall and Spring of 1st year

- Four Core Courses, typically completed in years 1-3
    - Psychopathology
    - Cognitive Development OR Social Development
    - Social Behavior & Personality
    - Cognitive Psychology
    - Behavioral and Computational Neuroscience
    - Cognitive Neuroscience I
- Successful defense of the Major Area Paper, fall of 3rd year recommended, latest possible date is spring of 3rd year
- Dissertation Proposal, 4th year
- Area-Specific Requirements
- TA'ing, typically years 2-4
    - 4 TA'ships are required for most students
- Thesis and Final Defense, 5th year, or 6th year for clinical students

Public Policy PhD

Program Code: G-PPS-PHD
Degree Designation: Doctor of Philosophy
Department: School of Public Policy
Website: sanford.duke.edu/academics/doctoral-program

Program Summary

The PhD in public policy is a research-based, interdisciplinary social science degree. Graduates of the program are prepared for academic careers and professional positions in research, consulting firms, or public agencies.

Students designate a disciplinary concentration in economics, political science, psychology, or sociology and a policy focus, such as social policy, globalization and development, or health policy. The program requires a two-course sequence in theories of political economy and a theory and methods course working in the student's social science disciplinary concentration.

Financial Aid

Duke University and the Sanford School of Public Policy are committed to supporting public policy PhD students for five years through a combination of scholarships, fellowships, research or teaching assistantships, and stipends, provided that students maintain satisfactory progress in the program.

For more information about financial support for PhD students at Duke, visit gradschool.duke.edu/financial-support.

For more information about Duke University Graduate School Fellowships, visit gradschool.duke.edu/financial-support/find-funding.

In addition to those awards available through the university, applicants are urged to compete for national and foundation awards available for graduate study. A website maintained by Duke's Office of Research Support lists awards available from various federal and private sources, as well as awards funded by the university. External awards, which are prestigious and valuable acknowledgments of a student's intellectual project and promise, typically replace departmental or Graduate School awards. Visit the Office of Research Support website for detailed information about external financial awards: researchinitiatives.duke.edu/funding-search-tools.

Faculty

The Sanford School's Public Policy PhD faculty members represent diverse disciplinary backgrounds and numerous research interests. The Public Policy PhD Program faculty consists of all members of the graduate faculty of Duke University with primary or secondary appointments in the Sanford School of Public Policy as well as members of the graduate faculties in the departments of political science, economics, sociology, and psychology and neuroscience, and of the faculties of the Nicholas School of the Environment, The Fuqua School of Business, Duke Law School, and other professional schools.

Academic Requirements

The program requires a two-course sequence in theories of public policy, microeconomics, and research methods. Students also complete coursework in a designated disciplinary concentration such as economics, political science, psychology, or sociology, as well as a policy focus, such as social policy, globalization and development, or health policy.

Students in the program are expected to pass a comprehensive exam at the beginning of the third year and a preliminary exam that is a dissertation prospectus defense at the end of the third year.

The MA in Public Policy

PhD students in good standing become eligible to receive an MA degree upon successful completion of the comprehensive exam, typically administered at the beginning of a student's third year in residence. Students who elect to exit the PhD program, or who fail one or more qualifying requirements up to and including the comprehensive exam, may be eligible to earn an MA in public policy, under conditions described below.

A. Coursework

Students must pass at least ten 3.0 credit graduate courses. These courses must include the following:

- PUBPOL 901
- PUBPOL 902
- PUBPOL 908
- two courses in research methods
- two courses in a disciplinary subfield within economics, political science or sociology
- two public policy electives in a specific policy area (500 level or above)

B. Completion Exercise

- **Option 1: The Comprehensive Exam**
  - Description: Students enrolled in the PhD program in public policy who have met all coursework requirements and successfully passed the Comprehensive Exam may apply for an MA in public policy as they continue to work toward the PhD degree. Students interested in obtaining the MA must apply to receive it and bring the necessary forms to be signed by the Comprehensive Exam Committee. Receipt of the MA in public policy precludes students from obtaining master's degrees in any other area during the course of their doctoral studies.
  - The Comprehensive Exam is designed to assess a student's mastery of existing scholarly work in an area delimited by traditional disciplinary subfield and policy area and is taken at the beginning of a student's third year in the PhD program. The Comprehensive Exam will consist of three components: 1) a research paper to be initially submitted in advance of the exam, with a revision due on the date of the written exam, 2) the written exam itself, and 3) an oral follow-up with the three-member examination committee. The paper and written test collectively serve the role of a completion exercise, and the oral follow-up serves as the defense of this completion exercise. **Literature Review Option** (replaces the written exam): Instead of an eight-hour written test, students may opt to write a journal-length manuscript that reviews and synthesizes a literature and/or makes a theoretical contribution to a field. The manuscript should indicate mastery of literature, and the author should synthesize and critically examine a field of research. The intent is to help the student grow these research skills and add to their academic accomplishments/vita.
  - The standard for passing the comprehensive exam at the MA level is intended to be lower than the standard for passing at the PhD level, thus a comprehensive exam committee may simultaneously deliberate (a) whether a student has met the standard to continue in the PhD program in good standing and (b) conditional on failing to meet this threshold, whether the student has met the requirements to receive the MA degree.
- **Option 2: The MA Project**
  - Rationale: The proposed "accelerated" master's degree for PhD students in public policy draws heavily from similar degrees available to PhD students in the political science, economics, and sociology departments at Duke. The option is primarily intended for those students who have completed the majority of the coursework for the doctoral program but were unable to meet one or more specific qualifying requirements, or for those students who have elected to leave the program voluntarily.
  - Students interested in pursuing option two must obtain approval from the director of graduate studies of the Public Policy PhD Program prior to the oral defense of the MA project.
  - Students, who elect to leave the program before the administration of the comprehensive exam, or those who fail to complete an earlier qualifying requirement, complete an MA project in lieu of the comprehensive exam. The MA project should demonstrate the student's ability to collect, interpret, and analyze pertinent material on a research problem. Ideally, the MA project will be a paper of approximately 20-30 pages, double-spaced. Students may choose to expand upon a term paper to fulfill this requirement. Student projects will be completed under the supervision of a faculty advisor. The project will be the principal topic of a final oral examination conducted by the advisor and two other public policy faculty members and scheduled to meet posted Graduate School deadlines for master's examinations (gradschool.duke.edu/academics/preparing-graduate/graduation-deadlines).

Religion PhD

Program Code: G-REL-PHD
Degree Designation: Doctor of Philosophy
Department: Divinity School, Trinity College of Arts & Sciences
Website: graduateprogramreligion.duke.edu

Program Summary

The Graduate Program in Religion offers a PhD in religion. The program is a collaboration between the Department of Religious Studies and Duke Divinity School.

For the PhD, students may concentrate their studies in one of the following fields of study: American Religion, Asian Religions, Christian Theological Studies, Early Christianity, Hebrew Bible/Old Testament, Islamic studies, New Testament, Religion, Aesthetics & Society, and World Christianity.

The program of doctoral studies normally presumes a foundation in the academic study of religion. Students applying for graduate work in religion directly from an undergraduate program should possess a strong undergraduate major in religion or a closely related field.

For more information on the PhD in religion, visit the Graduate Program in Religion's website.

Academic Requirements

Students will be expected to take courses that contribute to an understanding of their field of specialization and will be required to take two written preliminary examinations within that field. Depending on the field of specialization, students will take courses in one or two minor fields that contribute to the enrichment of their major area of study, and they will be required to take a written preliminary examination in each minor area. A minor requirement may be fulfilled within the program or by work in a cognate field, such as women's studies, English, history, literature, philosophy, political science, or sociology. An oral examination, conducted by the student's committee, follows shortly after the written examinations. Foreign language requirements determined by the faculty in the field of specialization must be met before taking preliminary examinations. Following successful completion of preliminary examinations, students work with their dissertation advisor and committee to obtain approval of their dissertation topic, write the dissertation, and defend it in an oral examination before the dissertation committee. For further information about academic requirements specific to each field of specialization, visit the Graduate Program in Religion's website.

Romance Studies PhD

Program Code: G-ROM-PHD
Degree Designation: Doctor of Philosophy
Department: Romance Studies Department
Website: romancestudies.duke.edu/graduate

Program Summary

The Department of Romance Studies at Duke University offers doctoral programs in French and Francophone, Italian, Spanish and Latin American literatures and cultures, and an innovative PhD track in comparative Romance Studies. We invite rigorous historical and theoretical approaches to the diverse sites across the globe where these languages are spoken. Our community of scholars studies diasporas and migration as much as nations; visual, media, and sonic cultures along with literary texts; and intellectual genealogies involving philosophy, critique, philology, and decolonial and postcolonial thought. We value and support the diversity of languages, epistemologies, methodologies, and histories as the core of our academic mission.

Flexible by design, our students' courses of study in French and Francophone, Italian, Spanish and Latin American literatures and cultures are developed in close and regular consultation with faculty advisors. Working collaboratively, they craft a meaningful curriculum of coursework, develop innovative dissertation topics, and prepare students to contribute to core fields and disciplines within the academy and beyond. Our multilingual and international faculty frequently work with students across the department. For students who substantively engage two or more of these linguistic and cultural traditions, the comparative Romance Studies track provides coursework divided evenly between the two areas of specialization, teaching opportunities in both languages, and a dissertation committee that guides students in both fields. Students may apply directly to this track, or may transfer into it by the beginning of their second year in the program.

Academic Requirements

The PhD requires **fourteen graduate courses** for students entering with a BA. Eight of those must be taken within the department. The remaining six may be taken in other departments. Students may take up to two independent study courses; additional independent studies may be approved by the Director of Graduate Studies (DGS). Students who enter with the MA only need to complete **ten graduate courses provided that four of their previous graduate courses are in the field of study or a closely related field.** Of those ten courses, at least six must be taken within the Romance Studies Department; the others can be taken in other departments. Students who wish to pursue this accelerated option need the approval of the DGS. Required courses for all doctoral tracks include ROMST 501S: Methods and Theories of Romance Studies and ROMST 700: Theories and Techniques of Teaching World Languages.

In order to complete the PhD, reading proficiency in a language other than the major one (and other than English) is required by the time the student takes the Dissertation Prospectus Workshop. For students in the Romance Studies PhD track, a high level of scholarly competency is required in **two** Romance languages. The faculty believe strongly in the utility, beauty, and importance of linguistic competences beyond English and the language(s) of specialization. Other departments at Duke offer opportunities to learn or improve languages through credited or audited courses, which we encourage students to explore.

Students must pass The Graduate School's Preliminary Exam, which takes the form of a Portfolio: a dossier of written work, bibliographies in major and minor fields, and an oral examination. The purpose of the exam is to allow students to establish their competencies in those fields for teaching and other professions, and to demonstrate their readiness to undertake independent dissertation research. Students are also required to complete a Dissertation Prospectus Workshop, including a document of approximately 15-20 pages outlining the topic, approach, and implications of the dissertation project. During a 2-hour workshop, the student's committee responds to the prospectus in order to refine the project, and assess its scope and contributions. The prospectus must be approved by the committee before full-time research and writing on the dissertation can begin. The dissertation committee meets one final time for a defense of the completed thesis. This vigorous engagement of the research helps students identify future directions of study. The committee may request some edits to the thesis prior to final submission to The Graduate School.

Sociology PhD

Program Code: G-SOC-PHD
Degree Designation: Doctor of Philosophy
Department: Sociology Department
Website: sociology.duke.edu/graduate

Program Summary

Applicants for admission are required to take the verbal and quantitative aptitude tests of the Graduate Record Examination.

Further details concerning the general departmental program, the specialties and their requirements, departmental facilities, the faculty, ongoing research, and stipends available may be obtained from the director of graduate studies.

Academic Requirements

The PhD program requires the student to take six core courses and a professionalization seminar (SOCIOL 701) for exposure to professional activities in sociology. The core courses include SOCIOL 710 (Sociological Theory), SOCIOL 722 (Social Statistics I), SOCIOL 723 (Social Statistics II), SOCIOL 720S (Logic of Inquiry), SOCIOL 703 (Modern Plain-text Computing), and SOCIOL 702 (Second-Year Paper Workshop). Students are required to take two additional advanced methods courses (to be determined by the student with approval of the director of graduate studies), and four general elective courses. Qualifying areas are determined with the academic advisor, but typically include culture and cognition, health and demography, organization and economic sociology, race and inequality, religion and social change, and social networks and computational sociology. The preliminary exam consists of a defense of the second year paper. A student entering with only an undergraduate degree would need to take fifteen courses (SOCIOL 701 and 702 count as two each) to satisfy degree requirements.

Statistical Science PhD

Program Code: G-STA-PHD
Degree Designation: Doctor of Philosophy
Department: Statistical Science
Website: stat.duke.edu/phd

Program Summary

The Department of Statistical Science at Duke University offers graduate study leading to PhD and MS degrees in statistical science. The PhD program offers thorough preparation in the theory and methods of statistics, with major emphases on modern, model-based statistical science, Bayesian and classical approaches to inference, computational statistics, and machine learning. A hallmark of the program is the integration of interdisciplinary applications into teaching and research, reflecting the department's broad and deep engagements in leadership and innovation in statistical science and its intersections with many other areas, including the biomedical sciences, computational sciences, data and information sciences, economic and policy sciences, environmental sciences, engineering, machine learning, physical sciences, and social sciences. The rich opportunities for students in interdisciplinary statistical research at Duke are complemented by opportunities for engagement in research in summer projects with nonprofit agencies, industry, and academia.

For an up-to-date faculty list and description of graduate programs in statistical science visit the website.

Academic Requirements

- **Maintain a GPA of 3.0 in Core6 courses**: STA 702L, 711, 721, 723, 732, 831, and enroll in the seminar course STA 701S
- **Preliminary Examination**: Typically taken in the Fall of the second year, and must be passed by the end of the third year
- **Teaching Assistant**: In years 2+ of PhD studies
- **Responsible Conduct of Research (RCR) Program**
    - 12 hours of RCR training, including Orientation and Graduate School RCR Forum or Departmental RCR Forum events
- **English Language Requirement** (for non-native English-speaking students)
- **Progress Toward Completion**
    - Satisfactory progress in courses and other program requirements
    - Annual progress form submitted to DGS before April 15 of each year
- **Dissertation**

Analytical Political Economy (AM)

Program Code: G-APE-AM
Degree Designation: Master of Arts
Department: Economics Department, Political Science Department
Website: econ.duke.edu/masters-programs/degree-programs/mape and polisci.duke.edu/graduate/ma/mape

Program Summary

The Master's Program in Analytical Political Economy is a joint program between the departments of political science and economics. Students preparing to enter this program will find an undergraduate background in political science, economics, statistics, or mathematics to be helpful. The program is designed to develop economic, political, modeling, game theory, and statistical skills relevant to the study of political economy and related areas. Its curriculum its flexible enough to prepare students for a related PhD program and/or a related professional career. Students complete coursework in political science and economics, but also other fields. Graduates are awarded an MA in analytical political economy as their degree.

Academic Requirements

Students must complete a minimum of 30 course credits:

- 12 course credits in political science courses numbering 500 or above, or substitutes approved by the MAPE directors;
- 12 course credits in select economics courses numbering 500 or above, or substitutes approved by the MAPE directors, with no more than 6 course credits from any one of the subfields of microeconomics, macroeconomics, and econometrics; and
- 6 additional credits in graded graduate courses in economics or political science. The final category may include approved independent study with economics and/or political science faculty advisors.

Courses in other relevant disciplines also may be counted toward the degree, subject to approval by the MAPE directors. Undergraduate courses (499 or lower) do not count toward the MAPE degree or a student's GPA. A graduate-level course paired with an undergraduate-level course may count toward the MAPE degree and a student's GPA only if the graduate-level version has a separate, more rigorous syllabus for graduate students. It is the student's responsibility to verify that this is the case before enrolling in any paired courses. Coursework during the program must include at least two completed research papers, with at least one by the end of the second semester.

Students must pass both a qualifying exam in political economy and a portfolio review. The qualifying exam, which is administered by the Department of Political Science, tests for competence in core themes of the MAPE program, including microeconomic and macroeconomic policy. The student's portfolio includes the final outputs of learning and research activities carried out during their master's studies. These outputs consist of final versions of all papers that received a grade of B+ or above (with the grade indicated); slides from any oral or written presentations; any computer code written for a term project; reports of any internships; and any other research product produced under the program. A passing portfolio must include at least one paper with a grade of A- or above. The portfolio also includes an up-to-date résumé or curriculum vitae; a self-assessment of the student's experiences in the MAPE Program; and a statement on the student's long-term plans.

Applied Ethics & Policy (AM)

Program Code: G-AEP-AM
Degree Designation: Master of Arts
Department: Duke Initiative for Science & Society/Graduate School of Arts & Sciences
Website: scienceandsociety.duke.edu/learn/ma

Program Summary

The Initiative for Science & Society, founded in 2013, is a campus-wide initiative at Duke dedicated to interdisciplinary education scholarship, and policy engagement relating to the integral role of science in law, policy, social institutions, and culture. Science & Society offers a Master of Arts in Applied Ethics & Policy, a program that teaches students how to identify, analyze, and propose solutions to address cutting edge and historical developments in science, medicine, technology, and policy. The program provides a foundation in the history, philosophy, legal, social, and theoretical approaches to bioethical analysis, as well as an introduction to science, tech and health policy. The degree had been previously named the MA in Bioethics & Science Policy, but in December 2024, the Board of Trustees approved Science & Society's application to change the name of the degree to reflect the evolution of its curriculum and focus.

A distinguishing feature of the program is the option for students to select a topical area in which to concentrate their advanced studies. These concentrations represent existing or emerging areas of knowledge that pose complex questions about the relationship between science, technology, ethics, and society. The two concentrations are Bioethics & Science Policy and Tech Ethics & Policy. Students can also concentrate in both or opt to not have a concentration.

Science & Society offers a host of workshops and programs to deepen master's students' understanding of the field, help them consider career options, and connect them with leaders in bioethics and science policy and with other departments on campus.

Science & Society also offers a JD/MA degree in cooperation with the Duke Law School. During their first semester at the Law School JD students may apply to participate in the joint degree, and obtain both degrees within three years. The MA is also available as a concurrent degree for PhD students, who may apply after completing their prelim exams.

Academic Requirements

The MA in Applied Ethics & Policy requires a minimum of 36 credits, and can be earned in one year on a full-time basis (3 full semesters) . Students in good standing who have completed the core requirements can elect to return for a fourth semester for research and/or electives.

Requirements include:

- 5 required core courses (15 credits)
- 4 elective courses (12 credits): Students may select electives from an extensive list of options from across the University.
- 1 Capstone Project (9 credits): Each student will complete a capstone project under the guidance of a faculty mentor, either an in-depth research paper, a field placement ("practicum"), with a written report analyzing the experience and integrating concepts learned in the program, or through participation in an Applied Ethics+ project. The capstone project is designed to demonstrate that a student has acquired extensive knowledge of current thinking in bioethics, tech ethics and policy; has collected, synthesized, and reflected on these issues; and has developed competence in scholarly writing.

Art and Art History (AM)

Program Code: G-ART-AM
Degree Designation: Master of Arts
Department: Art & Art History Department
Website: aahvs.duke.edu/graduate

Program Summary

The department offers a master's degree in digital art history/computational media (formerly historical and cultural visualization). The eighteen-month program integrates historical disciplines and the study of cultural artifacts with digital visualization techniques for the analysis and presentation of research. The program requires ten courses over three semesters in addition to summer research. Students affiliate with an existing faculty research initiative, from which they will develop their own independent research project for the MA thesis. Common themes that unite the various projects are the visualization of process, the representation of change over time, recontextualizing displaced objects and object biographies.

The department also offers a master of fine arts degree in experimental and documentary arts. For information on the MFA in experimental and documentary arts, visit aahvs.duke.edu/graduate/mfaeda.

Academic Requirements

The Guidelines for Graduate Students in the Doctoral Program in Art History fully describe these and additional requirements and the detailed steps in the student's graduate career.

Biomedical Engineering (MS)

Program Code: G-BME-MS
Degree Designation: Master of Science
Department: Biomedical Engineering Department
Website: bme.duke.edu/masters/degrees/ms-bme

Program Summary

Biomedical engineering is the discipline in which the physical, mathematical, and engineering sciences and associated technology are applied to biology and medicine. Contributions range from modeling and simulation of physiological systems through experimental research to solutions of practical clinical problems. The goal of the Graduate Program in Biomedical Engineering is to combine training in advanced engineering, biomedical engineering, and the life sciences so that graduates of the program can contribute at the most advanced professional level.

Academic Requirements

30 course credits, with an option of thesis

- Life Science course—3 credits
- Advanced Mathematics course—3 credits
- BME courses—12 credits
- Additional 12 credits through either:
    - Thesis Option—6 elective course credits and 6 independent study credits, *or*
    - Non-Thesis Option—12 elective course credits

Civil and Environmental Engineering (MS)

Program Code: G-CEE-MS
Degree Designation: Master of Science
Department: Civil & Environmental Engineering Department
Website: cee.duke.edu/academics/masters/ms

Program Summary

The Department of Civil and Environmental Engineering (CEE) at Duke University offers programs of study and research leading to the MS and PhD degree in civil and environmental engineering. The goal of the CEE program is to develop engineers who are capable of guiding the world toward a healthier, safer, and more sustainable future. Research and teaching activities focus on three signature areas:

- **Theoretical, Computational, & Applied Mechanics**, advancing mathematics and computing for applications in geomechanics, materials, hydrology, and fluid dynamics
- **Environmental Health Engineering**, motivated by needs to protect human health through monitoring, predicting and managing our natural resources and the built environment
- **Systems, Risk & Decision**, deepening fundamental engineering expertise required for risk assessment, hazard mitigation, and the design of resilient systems

Research efforts within the department focus on complex natural and built systems. With collaborators around the globe, we apply engineering methods to find solutions to significant challenges—aiming for a healthier and resilient world. Duke CEE researchers advance and protect the durability of infrastructure systems and natural resources, develop cutting-edge models to transform the engineering design process, and explore solutions that address human impacts on the environment and health.

Academic Requirements

The CEE Master of Science (MS) degree requires 30 course credits:

- Department courses - 6 credits
- Study Track courses - 9 credits. Each study track is associated with a sequence of core courses that parallel the research interests of our faculty:
    - Theoretical, Computational, & Applied Mechanics
    - Environmental Health Engineering
    - Systems, Risk & Decision
- Graduate electives - 9 credits from other approved graduate courses, with preference for engineering courses and those related to the student's study track area.
- Research for MS Thesis - 6 credits for their thesis work.
- For non-thesis MS, students must complete a total of ten graded courses (30 credits) and a project.
- Oral presentation of MS thesis or project with a MS exam committee
- Participation in the Graduate Colloquium
- Completion of the rubric form (thesis or non-thesis)

Computer Science (MS)

Program Code: G-CPS-MS
Degree Designation: Master of Science
Department: Computer Science Department
Website: cs.duke.edu/graduate/ms

Program Summary

The Department of Computer Science offers programs leading to the MS and PhD in computer science, with areas of concentration including algorithms, artificial intelligence, scientific computing and numerical analysis, and systems and architecture. The MS program consists of an option involving coursework only (30 graded course credits) or an option involving a combination of coursework (24 graded and up to 6 ungraded course credits) and a research thesis or project under the supervision of a faculty advisor.

A student entering graduate study in computer science should have a strong undergraduate grounding in the fundamentals of calculus, linear algebra, and discrete mathematics, and basic knowledge of data structures, algorithms, and one or more higher-level computing programming languages; some undergraduate research experience is preferred. Students should consult the official departmental document Computer Science Graduate Program Degree Requirements for a full explanation of requirements not listed in this bulletin.

Outstanding programs in algorithms and computational complexity; computational geometry; internet systems, networking and security; computer architectures and distributed systems; computational biology; biological computing and nanotechnologies; databases and cloud computing; machine learning theory and applications; and artificial intelligence, computational economics, computer vision, natural language processing, and scientific computing provide exciting and challenging research opportunities to students in computer science. The research interests of the department's faculty overlap with these areas and with research areas in other disciplines such as biology, engineering, nanotechnology, environmental sciences, economics, biochemistry, statistics, and medicine.

Academic Requirements

All MS students have these three requirements in common:

- earn a minimum of thirty units of graduate credits,

- be registered continuously, and
- take a master's exam.

How the student chooses to complete those requirements, however, is a choice the student may make. The three options are course-only, project, or thesis.

Course-only Requirements

- at least eighteen credits of graduate CS coursework
- at least six credits of coursework outside CS, drawn from a field related to CS or to the student's area of concentration
- at least six credits of approved course electives

At least six of the thirty credits must be earned by taking courses that have a *significant course-project component* (at least 30% of the total weight).

Each student will take an oral exam, typically 15-20 minutes long, administered by a three-person examining committee appointed by the Department Chair. The exam is based on a portfolio containing:

- all student papers, project reports, and slides from oral or written presentations, both from project-oriented and other courses
- material created by the student as a research or teaching assistant
- a written description of an internship project, including a discussion of how the experience relates to the student's field and a summary of what the student has learned (if the student undertook an internship)
- an updated resume
- a recent transcript

Project or Thesis Requirements

- at least twelve credits of graduate CS coursework
- at least six credits of coursework outside CS, drawn from a field related to CS or to the student's research
- at least six credits of approved course electives
- at most six credits of (ungraded) research, which count toward the 30 required credits, but allow time in the student's schedule to work on their project or thesis research

Each student must complete a research project or thesis under the supervision of the faculty advisor and a supervisory committee. The student must prepare a written project report or thesis, as applicable, and defend the work in a public presentation before the committee. The committee votes to accept the work as a project if the student has chosen the project option, to accept the work as a thesis if the student has chosen the thesis option, or to fail the defense.

Critical Asian and Middle Eastern Humanities (AM)

Program Code: G-CAMEH-AM
Degree Designation: Master of Arts
Department: Asian & Middle Eastern Studies
Website: asianmideast.duke.edu/graduate

Program Summary

The Department of Asian & Middle Eastern Studies (AMES) offers a master's degree in Critical Asian and Middle Eastern Humanities (CAMEH). This program 1) provides training in the critical analyses of written, visual, and performance cultures of the Middle East, East Asia, and their diasporas; 2) explore intra- and inter-continental exchanges and ties; 3) integrates approaches and methodologies from literary studies, film studies, cultural studies, and religious studies; and 4) provides students with the skills needed to pursue either a doctoral or professional degree in a related area or a career in a field relating to Asia writ large.

AMES faculty expertise is particularly strong in the early modern, modern, and contemporary periods, and faculty research interests coalesce around the broad areas of: 1) East Asia, including China, Taiwan, Japan, and South and North Korea; 2) the Middle East, including Turkey, Lebanon, Israel, Egypt, and Iran; 3) Asian and Middle Eastern Diasporas.

Academic Requirements

To receive the MA, students must complete ten graduate-level courses, of which at least five must be offered by (or cross-listed with) AMES. All students must have third-year proficiency (or the equivalent) in one of the languages taught in the department by the time they graduate. Students who are already proficient or fluent in such a language before they arrive are not required to learn a second language, though they have the option of doing so. All students must also complete an MA thesis and successfully defend it in an oral defense. All students will be offered a first-year faculty advisor before arriving at Duke and will then be assigned a thesis advisor for their second year.

Master of Fine Arts in Dance (MFA)

Program Code: G-DANC-MFA
Degree Designation: Master of Fine Arts
Department: Dance Department
Website: danceprogram.duke.edu/graduate

Program Summary

The Duke University Dance Program focuses on dance as an integral part of the human experience and the moving body as a site of rigorous knowledge production. The program's aim is to engage students in the profound potential of interdisciplinary dance practice and research in service to individuals, cultures, and societies at large.

The Master of Fine Arts in Dance: Embodied Interdisciplinary Praxis (MFAEIP) is a two-year, full-time terminal degree dedicated to practice-led research that centers dance as a transformative force in society. Faculty, guests, and admitted students share a commitment to historically specific, culturally and theoretically informed approaches to dance and performance across a wide range of communities and contexts. Across four semesters, students mobilize embodied practice as a means of engaging in wider conversations and issues. In so doing, MFAEIP students model the transformative potential of performance to make tangible contributions to society at large.

Digital Art History/Computational Media (AM)

Program Code: G-AHV-AM
Degree Designation: Master of Arts
Department: Art & Art History Department
Website: aahvs.duke.edu/graduate/degree-programs

Program Summary

The **MA in Digital Art History/Computational Media** (DAH/CM) is an 18-month to 2-year program offering two tracks with shared core requirements: a track in digital art history and a track in computational media. The *digital art history track* integrates historical disciplines and the study of cultural artifacts with digital visualization techniques for the analysis and presentation of research. The *computational media track* focuses instead on new approaches to computational processes, and forms of interpreting quantitative and qualitative data. Both programs build on courses and well-developed strengths at Duke University and require ten (10) courses over three semesters in addition to summer research. Students affiliate with an existing faculty research initiative, from which they develop their own independent research project for the MA thesis.

The digital art history track prepares students for future work in fields such as graduate study in Art History and Archaeology, public history, city planning and architectural design, cultural heritage, museum exhibition design, and visualization-based journalism, and provides a springboard for more advanced study in art history, archaeology, architectural history, and visual or media studies. The ideal candidate seeks engagement with the digital humanities, digital art and architectural history, or digital archaeology; this student can conceptualize digital visualization as a part of the research process and for the publication or presentation of scholarship. Common themes that unite the various projects are the visualization of process, the representation of change over time, the recontextualization of displaced objects, and the biographies of objects. The digital art history track encourages applicants from across the Humanities and Social Sciences, whether from established disciplines, such as history, archaeology, and art history, or emerging fields of study, such as spatial history, media arts & sciences, and cultural geography.

The computational media track explores research and presentation strategies enabled by the information sciences, new approaches to computational processes, and new forms of interpreting quantitative and qualitative data. The goals of the program are for students to understand the critical affordances and potential of digital media, to develop competencies in data-driven and computational approaches to knowledge production, and to develop a hybrid theory-practice MA thesis that demonstrates their expertise in action around a particular subject. Students in this track affiliate with an interdisciplinary Lab focused on digital archeology, generative media arts, art history, law, and markets, digital humanities, physical computing, or information science and studies as a way to learn new technologies and situate their work within a specific research domain. The program's skills-centered instruction, combined with the requirement for lab affiliation and collaborative research and the emphasis on theoretical analysis, will produce graduates who not only have hands-on know-how and technical skills but who have developed a sophisticated understanding of informational globalization and a rapidly changing world.

Academic Requirements

10 graduate courses, including:

- Digital Art History/Computational Media Proseminar 1 and Proseminar 2 (ARTHIST/CMAC 580S and 581S), both completed in the first semester.
- Six (6) approved graduate-level elective seminars related to the course of study
- Thesis Research (ARTHIST/CMAC 791 and 792) – Note: 792 may be substituted with elective seminar coursework on approval of advisor
- Final thesis, with written and practice-based components

East Asian Studies (AM)

Program Code: G-EAS-AM
Degree Designation: Master of Arts
Department: East Asian Studies
Website: asianpacific.duke.edu

Program Summary

Duke's East Asian Studies program offers comprehensive coverage of East Asian politics, societies, history, and cultures, with particular strengths in literature; modern history; comparative history and culture; anthropology; film, media and visual studies; comparative studies of capitalism; and religious studies. Research on East Asia at Duke is supported by extensive library holdings managed by subject librarians for China, Japan, and Korea. Duke also has close ties with Asian Studies faculty at the University of North Carolina at Chapel Hill (UNC), and students can receive credit for courses at either institution.

Academic Requirements

Students pursuing an MA in East Asian Studies are given the option to either write an MA thesis or revise and submit two research papers originally developed during coursework to satisfy milestone requirements for the degree. Students are required to declare their milestone option by September 30th of the second year. All students, whether choosing the Thesis or Research Paper option, must take an East Asian Studies Core Course (EAS 700) as part of their EAS listed course requirements and demonstrate proficiency in an East Asian language equivalent to successful completion of the full 3rd-year language sequence at Duke. Up to two regional language courses taken at the graduate level may count toward course requirements. Ten total courses (30 semester hours) are required for the degree; courses must be from two or more programs or departments.

Thesis Option

Students who intend to pursue a PhD after completing the MA program are strongly encouraged to select the thesis option. A thesis is an original scholarly work, rooted in one or more relevant academic disciplines, that is crafted under the supervision and guidance of a thesis advisor. Theses in EAS are typically 40-60 pages in length not including references. The MA thesis must follow all guidelines stipulated by the Graduate School and must be defended before an examination committee of three or more faculty members. The Chair and at least one other committee member must be APSI core faculty. Students are required to form their committee by September 30th of their second year.

Students who elect to write an MA thesis must complete 10 graduate-level courses (30 semester hours) including 7 listed East Asian Studies courses and 1-2 independent studies (IS) with a thesis advisor to develop the thesis project, ideally taken during the second and/or third semester. Thesis students may enroll in up to one additional independent study with an APSI core faculty member to count toward EAS listed course requirements. Students must submit a separate application for research independent study for each IS.

Research Paper Option

Students who anticipate pursuing a career outside of academia are encouraged to consider this option, which allows students to revise and submit two significant academic research papers developed during coursework to an examination committee. Both research papers must have received a letter grade 'B' or above in the course they were originally submitted and be revised based on faculty comments from the course. Students are required to share faculty comments on each paper as early as possible with their committee Chair. Additionally, students must write a 4-5 page introduction to the research papers demonstrating the role the research has played in the students' MA program of study. The two research papers must be defended before an examination committee of three or more faculty members. The committee Chair and at least one other member must be APSI core faculty. Students are required to form their committee and identify the papers they will use to fulfill the milestone requirement by September 30th of their second year.

To earn the MA, students must complete a total of 10 graduate-level courses (30 semester hours) including 8 listed East Asian Studies courses. Up to two graduate-level independent studies (IS) taken with APSI core faculty members may count as listed East Asian Studies courses. Students must submit a separate application for research independent study for each IS.

Economics (AM)

Program Code: G-ECON-AM
Degree Designation: Master of Arts
Department: Economics Department
Website: econ.duke.edu/masters-programs/degree-programs/ma-econ

Program Summary

The MA in Economics is designed to give students a quantitative approach to economics with the flexibility to tailor the degree to fit their future goals. This program offers comprehensive instruction in a wide range of areas within the discipline, including computational economics, economic analysis, and financial economics.

Students preparing to enter these programs will find an undergraduate background in mathematics, engineering, computer science, statistics, or economics to be very helpful.

Academic Requirements

The MA program requires a minimum of 30 graded course credits in economics and related fields, to include a minimum of 15 credits in economics. Students' course selections are based on their specific interests and on recommendations made by their academic advisors in order to meet their longer-run goals. Courses offered through The Graduate School, listed as "GS" courses, do not count toward the 30-course credit requirement.

All MA students must complete a minimum of two courses (6.0 course credits) in microeconomics and macroeconomics from the following list of courses: ECON 601, 602, 605, 606, 620, 624, 652, 664, 701, 702, 705, 706, or approved substitutes. They also are required to complete a minimum of one course (3.0 course credits) in econometrics from the following list of courses: ECON 608, 612, 613, 623, 672, 703, 707, or approved substitutes. At least one course (3.0 course credits) must be an approved capstone, which cannot be used to fulfill any of the previous requirements. Students are required to receive a B grade or better in this course.

The additional 18 credits required can be a combination of courses in economics, computer science, mathematics, and statistics at the 500 level or higher. Limitations to courses which count for credit toward the degree include: students may take either ECON 673/MATH 581 or ECON 671, but not both; students may take either ECON 674/MATH 582 or ECON 678, but not both; and MATH 712 and MATH 719 will not be accepted without previous approval from the MA Director. Undergraduate courses (499 or lower) do not count toward the MA degree or a student's GPA. A graduate-level course paired with an undergraduate-level course may count toward the MA degree and a student's GPA only if the graduate-level version has a separate, more rigorous syllabus for graduate students. The student may need advance approval from the director of MA studies for some of these courses. It is the student's responsibility to verify that this is the case before enrolling in any paired courses. At least five courses (15.0 course credits) must be in economics. This includes the courses mentioned above. Any course substitutions must be approved by the director of MA studies.

MA students must pass a final exam administered by their committee covering a portfolio of learning and research activities carried out during their master's studies. The portfolio must include the following items: all student (final) papers and slides from oral or written presentations as applicable; when applicable, the research output from those courses; a capstone course paper in economics, describing a mature project with research content; and an updated résumé/CV. The portfolio must include at least one substantial research paper, which is typically from a capstone course but can be from any course which counts towards the degree and in which the student earns a grade of B or better.

Economics and Computation (MS)

Program Code: G-ECS-MS
Degree Designation: Master of Science
Department: Computer Science Department, Economics Department
Website: econ.duke.edu/masters-programs/degree-programs/msec and cs.duke.edu/graduate/ms

Program Summary

The Master's Program in Economics and Computation is a joint program between the departments of computer science and economics. Students preparing to enter this program will find an undergraduate background in mathematics, engineering, computer science, statistics, or economics to be helpful. This program is designed to meet the needs of students with varied levels of exposure to either field, but a strong quantitative background is recommended. It is designed to train and develop computational skills linked to economics, finance, policy, and related areas to prepare graduates for PhD studies or related professions. Students complete coursework in both computer science and economics. Graduates will be awarded an MS in economics and computation as their degree.

Academic Requirements

- **30 credits in economics and computational science**
  - **At least 12 credits in Economics,** with no more than 6 credits from any one of following the three sub-fields:
    - **Microeconomics**
      - ECON 601 Microeconomics
      - ECON 605 Advanced Microeconomic Analysis
      - ECON 701 Microeconomic Analysis I
      - ECON 705 Microeconomic Analysis II
    - **Macroeconomics**
      - ECON 602 Macroeconomic Theory
      - ECON 606 Advanced Macroeconomics II
      - ECON 652 Economic Growth
      - ECON 656S International Monetary Economics
      - ECON 702 Macroeconomic Analysis I
      - ECON 706 Macroeconomic Analysis II
    - **Econometrics**
      - ECON 608 Introduction to Econometrics
      - ECON 612 Time Series Econometrics
      - ECON 613 Applied Econometrics in Microeconomics

        - ECON 703 Econometrics I
        - ECON 707 Econometrics II
      - Or approved substitutes.
    - **At least 12 credits in Computer Science (500-level or higher)**
- **Internship** (optional)
- **ONE capstone course**, selected from the following options:
    - Any graded graduate computer science course (including independent study) with a significant project component may serve as a capstone course.
    - **An approved economics capstone course**
- **Completion exercise**: The student must pass a final exam administered by the student's committee covering a portfolio of learning and research activities carried out during their master's studies. The portfolio must include one of the following two items: a capstone course in either computer science or economics, or a project paper on an approved topic developed via independent study with one or more computer science and/or economics faculty advisors if available. This document is expected to describe a mature project with research content.
    - **Portfolio**
    - Final exam
- **Responsible Conduct of Research** (RCR) training during orientation and 1 RCR forum 2-hour course (either GS 711 or GS712)
- (For International Students) **English Language Proficiency**

Electrical and Computer Engineering (MS)

Program Code: G-ECE-MS
Degree Designation: Master of Science
Department: Electrical & Computer Engineering Department
Website: ece.duke.edu/masters/degrees/ms

Program Summary

Graduate study in the Department of Electrical and Computer Engineering (ECE) is intended to prepare students for leadership roles in academia, industry, and government that require creative technical problem-solving skills. The department offers both PhD and MS degree programs with options for study in a broad spectrum of areas within electrical and computer engineering. Research and course offerings in the department are organized into four areas of specialization: computer engineering; engineering physics; microelectronics, photonics, and nanotechnology; signal and information processing. Detailed descriptions of course offerings, faculty research interests, and degree requirements may be found on the department's website.

Interdisciplinary programs are also available that connect the above areas with those in other engineering departments, computer science, the natural sciences, and The School of Medicine. Students in the department may also be involved in research conducted in one of Duke's centers (e.g. the Fitzpatrick Institute for Photonics and Communications, the Center for Metamaterials and Integrated Plasmonics). Recommended prerequisites for graduate study in electrical engineering include knowledge of basic mathematics, statistics, and physics, electrical networks, electromagnetics, and system theory. Students with nonelectrical and/or computer engineering undergraduate degrees are welcome to apply but should discuss their enrollment and course requirement options with the director of graduate studies.

Academic Requirements

The MS degree program includes thesis, project, or coursework options.

A minimum of 30 units of earned graduate credit beyond the Bachelor's degree is required for the MS degree. The distribution of these 30 units depends upon whether a student chooses the courses-only, project, or thesis option.

Courses-only option

- 12 units of graduate-level* ECE courses (ECE 899 courses may not be used as part of this requirement)
- 6 units of approved graduate-level technical electives (ECE 899 courses may not be used as part of this requirement)
- from Engineering (including ECE), Math, Statistics, Computer Science, or Natural Science (i.e., Chemistry, Physics, Biology), or other courses approved by the faculty
- 12 units approved graduate-level electives**
- Completion of ECE 701 (ECE Master's Success Seminar, 0 credits)
- Final exam. The Graduate School requires a final exam approved by a committee made up of three Graduate Faculty members, one of whom must be from a department other than ECE or outside the student's main curricular area. The committee must be approved by the Director of Graduate Studies and the Dean of the Graduate School at least one month prior to the examination date. The student is not required to generate a written document for the ECE department, and the format of the exam is determined by the department.

Project option

- 12 units of graduate-level ECE courses (ECE 899 courses may not be used as part of this requirement)
- 15 units approved graduate-level electives**

- 3 units of ungraded research
- Completion of ECE 701 (ECE Master's Success Seminar, 0 credits)
- Final project. For the project option, a written research report and oral presentation are required to be presented to a committee made up of the student's advisor and two other members of the graduate faculty, one of whom must be from a department other than ECE or outside the student's main curricular area. The committee must be approved by the Director of Graduate Studies and the Dean of the Graduate School at least one month prior to the examination date. The format of the written and oral project reports are determined by the student's advisor. The project report is not submitted to the Graduate School; however, a final copy must be submitted to the ECE Department.

Thesis option

- 12 units of graduate-level ECE courses (excluding ECE 899)
- 12 units of approved graduate-level electives**
- 6 units of ungraded research
- Completion of ECE 701 (ECE Master's Success Seminar, 0 credits)
- Final thesis. A written thesis must be uploaded by the guidelines presented in the Graduate School's Guide for the Electronic Submission of Thesis and Dissertation. The thesis must be defended orally before a committee composed of the faculty member under whose direction the work was done and at least two other members of the graduate faculty, one of whom must be from a department other than ECE or outside the student's main curricular area. The committee must be approved by the Director of Graduate Studies and the Dean of the Graduate School at least one month prior to the examination date.

*Graduate-level courses are numbered 500 and above.

**No more than two ECE 899 Independent Study courses may be used to satisfy degree requirements.

Selection of all courses, particularly in the student's major area, is tailored to the student's background via consultation with their assigned advisor. Electives are subject to final approval by the Director of Graduate Studies and should be chosen to provide a coherent program of study.

Details concerning committee approvals, filing of intention to graduate, and various important deadlines may be found in the Director of Graduate Studies Assistant's (DGSA) office, or at gradschool.duke.edu/academics.

Master of Fine Arts in Experimental and Documentary Arts (MFA)

Program Code: G-EDA-MFA
Degree Designation: Master of Fine Arts
Department: Art & Art History Department
Website: mfaeda.duke.edu

Program Summary

The master of fine arts in experimental and documentary arts (MFA|EDA) is a terminal degree supported by three academic units: the Department of Art, Art History, and Visual Studies, the Center for Documentary Studies, and the Program in Cinematic Arts. The MFA|EDA brings together two forms of artistic activity—the documentary approach and experimental production in analog, digital, and computational media—in a unique program that will foster collaborations across disciplines and media as it trains sophisticated, creative art practitioners.

Academic Requirements

The master of fine arts in experimental and documentary arts degree requires fifteen courses over four semesters: ten required (core) courses in prescribed sequence and five elective courses. In order to build cohesion in the program, all matriculating students will enroll concurrently in required courses in the first semester: one studio course—MFAEDA 711 (Documentary Fieldwork), one seminar—MFAEDA 702 (Genealogies of the Experimental), and a minimum of one elective. In the second semester, the cohort will enroll in one required studio course—MFAEDA 712 (Experiments in the Moving Image), one required seminar—MFAEDA 703 (Continuity and Change in Experimental and Documentary Arts), and a minimum of one elective. After a summer of individual thesis research, the second year will focus on supporting production of the thesis project and paper via an elective methods seminar, a thesis production studio course, a seminar on research and writing the thesis, as well as a minimum of three elective courses (two electives in the third semester and one elective in the fourth and final semester). Additionally, all MFA|EDA students are required to enroll in MFAEDA 720-723 (Critique I-IV)—to review, and discuss student work—in all four semesters. Final projects will be presented at an MFA|EDA Thesis Exhibition in the fourth semester and a written thesis paper will be submitted.

Global Health (MS)

Program Code: G-GHL-MS
Degree Designation: Master of Science
Department: Global Health
Website: globalhealth.duke.edu/programs/master-science-global-health

Program Summary

The master of science in global health (MS-GH) is administered by the Duke Global Health Institute (DGHI) and leverages outstanding faculty from across Duke to take on the most complex health challenges facing the world today. A guiding principle of the degree program is the recognition that a multidisciplinary and multisectoral approach to health is essential, as health is influenced by a multitude of factors, including, but not limited to: individual behaviors; family and childhood dynamics; community characteristics; economic status; gender; genetics; country laws and politics; the environment; social determinants of health; and the availability, accessibility, and quality of education, health care, nutrition, water, housing, and other basic goods.

Academic Requirements

The thirty-nine-unit curriculum includes seven core courses and five electives; a ten-week (minimum) applied experience utilizing learned global health knowledge, concepts, research methods and project management skills; and a research-based thesis or scholarly paper. It is designed as a three-to-four-term program.

The six core courses are:

- Global Health 701 (Global Health Challenges)
- Global Health 702 (Global Health Research: Design and Practice)
- Global Health 705 (Biostatistics and Epidemiology for GH Science I)
- Global Health 707 (Biostatistics and Epidemiology for GH Science II)
- Global Health 740 (Global Health Ethics in Research, Policy, & Practice)
- Global Health 750 (Health Systems in Low and Middle Income Countries)

Elective courses will be offered in various departments, schools, and institutes across the university. Students will select from a list of approved courses.

An applied experience is also required and students will either complete a research-based scholarly thesis or a practice-based internship with a scholarly project.

Visit the Global Health Institute website for more detailed course descriptions and elective options, or see the individual department's listing.

Global Health—Duke Kunshan University (MS)

Program Code: K-GHL-MS
Degree Designation: Master of Science
Department: Global Health
Website: globalhealth.dukekunshan.edu.cn

Program Summary

The master of science in global health (MSc-GH) is administered by Duke Kunshan University, with support from the Duke Global Health Institute. A guiding principle of the degree program is the recognition that a multidisciplinary and multi-sectoral approach to health is essential, as health is influenced by a multitude of factors, including, but not limited to: individual behaviors; family and childhood dynamics; community characteristics; economic status; gender; genetics; country laws and politics; the environment; and the availability, accessibility, and quality of education, health care, nutrition, water, housing, and other basic goods.

Academic Requirements

The thirty-eight-unit curriculum includes six core courses, five electives, a ten-week (minimum) field experience to apply learned research methods, and a research-based scholarly thesis. It is designed as a three-to-four-term program.

The six core courses are:

- Global Health 701K (Global Health Challenges)
- Global Health 702K (Global Health Research: Design and Practice)
- Global Health 705K (Biostatistics and Epidemiology for Global Health Science I)
- Global Health 707K (Biostatistics and Epidemiology for Global Health Science II)
- Global Health 740K (Ethics for Global Health Research)
- Global Health 750K (Health Systems in Developing Countries)

Students will select from a list of approved elective courses. Students are also required to complete a fieldwork experience of at least ten weeks, approved by the director of the MSc-GH program, and a research-based scholarly thesis.

History (AM)

Program Code: G-HIST-AM
Degree Designation: Master of Arts
Department: History Department
Website: history.duke.edu/graduate/degrees/ma

Program Summary

The Master of Arts degree can be completed within two calendar years. Our program is very competitive, and we rarely admit students specifically to the MA program, although many doctoral students obtain a MA en route to their PhD.

Academic Requirements

Candidates for the AM degree must have a reading knowledge of at least one ancient or modern foreign language related to their programs of study and have completed successfully two substantial research papers, normally the product of a year's seminar or two-semester courses. The paper(s) must be examined and approved (at a required AM meeting) by three readers: the supervising professor and two other professors from the graduate faculty.

Humanities (AM)

Program Code: G-HUM-AM
Degree Designation: Master of Arts
Department: Humanities Program
Website: gradschool.duke.edu/academics/programs-degrees/humanities

Program Summary

The Master of Arts Program in Humanities is an interdepartmental program tailored to the needs of individual students who pursue interdisciplinary graduate study in the humanities and interpretive social sciences. The candidate must define a theme, historical period, or problem for analysis, and then select appropriate coursework with the aid and approval of an academic advisor.

The Master of Arts Program in Humanities is designed for students who seek an intellectual or research focus not otherwise available within any existing graduate program at Duke. Applicants must hold a bachelor's degree in any field (or the equivalent to a US bachelor's degree) from an accredited institution, and must demonstrate sufficient background in humanities or interpretive social science to permit productive study at the graduate level. Admission is by regular application to The Graduate School. Students may enroll full-time or part- time. The program also participates in the joint JD/MA degree mechanism offered in conjunction with Duke Law School. This allows law students to develop and broaden a complementary field of interest—women's studies, for example, or contemporary literature and hermeneutic theory—to maintain an intellectual focus already developed in their undergraduate careers.

Academic Requirements

Thirty-course credits of coursework and three semesters of continuous enrollment are required for completion of the program; details are available at gradschool.duke.edu/academics/programs-degrees/humanities.

The degree may be earned with or without a thesis. Any thesis must follow the standard formatting guidelines of The Graduate School. The candidate who chooses not to submit a thesis must submit instead at least two substantial papers arising from coursework. Both thesis and nonthesis candidates must pass a final examination based on these papers or the thesis, with a minimum of three approved graduate faculty serving as the examination committee.

Interdisciplinary Data Science (MS)

Program Code: G-IDS-MS
Degree Designation: Master of Science
Department: Graduate School
Website: datascience.duke.edu

Program Summary

The master in interdisciplinary data science (MIDS), sponsored by the Social Science Research Institute, is home for creative problem-solvers who want to use data strategically to advance society. The program cultivates a new type of quantitative thought leader who uses disruptive computational strategies to generate innovation and new insights.

MIDS combines rigorous computational and technical training with field knowledge and repeated practice in critical thinking, teamwork, communication, and collaborative leadership to generate data scientists who can add value to any field.

An interview may be required in addition to all Graduate School requirements.

For more information, contact the director of communications at (919) 681-1972 or dukemids@duke.edu.

Academic Requirements

The MIDS program requires 42 credits for successful completion: 30 credit hours of IDS graduate coursework, at least 12 elective credits. MIDS students are also required to complete a summer internship between their first and second academic years.

Detailed Degree Requirements

Core courses

- Data Engineering Systems (IDS 706)

- Introduction to Natural Language Processing (IDS 703)
- Modeling and Representation of Data (IDS 702)
- Unifying Data Science (IDS 701)
- Principles of Machine Learning (IDS 705)
- Data Ethics (IDS 704)
- Data Logic, Visualization, and Storytelling (IDS 707)
- Data Science Dialogues (IDS 791)
- MIDS Workshop (IDS 898)
- Capstone Project (IDS 798)

Elective Requirements. MIDS Students must enroll in and receive credit for 12 additional credit hours of MIDS-related electives. Popular electives include those from the Electrical and Computer Engineering (ECE), Mathematics, Statistics, Energy, and Public Policy departments. Once enrolled, the MIDS Assistant Director will go over your options with you. While 12 credits (or four elective classes) is required, MIDS students can take up to six (6) electives in total.

Summer Internship. MIDS requires an internship for successful degree completion for both foreign and domestic students. Students enrolled full-time in the MIDS program must engage in a summer internship between the first and second year of their graduate education.

The internship is an integral part of the MIDS program and must be relevant to the MIDS curriculum. MIDS students studying at Duke University on an F-1 visa are eligible for Curricular Practical Training (CPT) full-time work authorization.

Liberal Studies (AM)

Program Code: G-MALS-AM
Degree Designation: Master of Arts
Department: Master of Arts in Liberal Studies
Website: liberalstudies.duke.edu

Program Summary

The Graduate Liberal Studies (GLS) program is a flexible, self-designed master's program grounded in the interdisciplinary liberal arts. With part- and full-time study available and courses offered in fall, spring, and summer, the program offers learners of all ages and backgrounds strong academic and professional development support and access to scholars and resources from across the university.

The broad scope of the degree allows students to choose from a wide range of courses, creating a multidisciplinary experience that promotes intellectual development and is flexible enough to meet a variety of personal and professional educational goals.

Further information about the master of arts degree in the Graduate Liberal Studies program is available on the GLS website.

Academic Requirements

The 30-unit program (9 courses and a final project) consists of interdisciplinary seminars developed specifically for this program, courses from other Graduate School departments, occasional study-abroad or study-away courses, and a final project that may take the form of academic research, applied research, or creative work. Students may also pursue graduate certificates in areas such as African and African-American Studies, International Development Policy, and Latin American Studies.

Materials Science and Engineering (MS)

Program Code: G-MSEG-MS
Degree Designation: Master of Science
Department: Pratt School of Engineering, Trinity College of Arts & Sciences
Website: dmi.duke.edu/degrees/masters

Program Summary

The University Program in Materials Science and Engineering (MSE) is a multi-disciplinary graduate program that resides within the Graduate School. This multi-department program is designed to accommodate MS students from a variety of disciplinary backgrounds and to help create a thriving materials community across campus through shared curricular experiences. Participating departments from Pratt School of Engineering and Trinity College of Arts & Sciences include Biology, Biomedical Engineering, Chemistry, Civil and Environmental Engineering, Electrical and Computer Engineering, Mathematics, Mechanical Engineering and Materials Science, and Physics. The research areas of emphasis in the MSE Program include soft matter and biomaterials, computational materials science, metamaterials, energy materials, electronic/photonic/quantum materials, and sustainable materials. In addition, the potential for unique exposure and access to the School of Medicine, the Sanford School of Public Policy, the Nicholas Institute for Energy, Environment & Sustainability, and the Innovation & Entrepreneurship Initiative can provide the resources needed for students to chart their paths. Information about the graduate program may be found on the MSE website.

Academic Requirements

At least thirty-course credits are required for students with a bachelor's degree to receive graduate degrees in the MSE Program. For the MS degree, only a project option is available. Core courses (3 or 4 credits each) are required to cover fundamentals and to prepare for research with MSE affiliated faculty. These core courses should be taken in the first year and must be selected from nine options. MS students must select six courses. In addition to the minimum of 18 course credits from the core courses, a three-semester seminar course (3 credits total) and three elective courses (3 or 4 credits each) are required, all of which should be completed within the second year for a minimum of 30 course credits. The elective courses must be approved by the Director of Graduate Studies. A maximum of one elective course may be replaced with an independent study to receive course credit for research. Academic Integrity and Responsible Conduct of Research training is required by The Graduate School: 6 hours for MS students.

- **Core Courses**
  - CHEM 548: Solid State/Materials Chemistry (Fall)
  - CHEM 544: Statistical Mechanics (Fall) or ECE 521: Quantum Mechanics (Fall)
  - ME 562: Materials Synthesis & Processing (Fall)
  - ME 511: Computational Materials Science (Spring)
  - ME 563: Fundamentals of Soft Matter (Spring), ME 555, Section 7: Fundamentals of Soft Matter (Spring)
  - ECE 721/ME 711: Nanotechnology Materials Lab (Spring) or PHYS 670: Experimental Methods in Condensed Matter Physics (Spring) or ECE 511/NANO511: Found. of Nanoscale Sci. & Technology (Spring)
- **Seminar Course**
  - ME 560S: Materials Science and Engineering Seminar (3 semesters)
- **Elective Courses**
  - Choose three electives. Must be approved by the Director of Graduate Studies.
- **MS Project Exam**
  - A project exam is required to complete the MS degree. In the project exam, a poster presentation is reviewed by the Graduate Exam Committee.

Mechanical Engineering and Materials Science (MS)

Program Code: G-ME-MS
Degree Designation: Master of Science
Department: Mechanical Engineering & Materials Science Department
Website: mems.duke.edu/masters/degrees/ms

Program Summary

The department offers programs of study and research leading to the MS and PhD in mechanical engineering and materials science. The department's broad areas of concentration include aerodynamics and aeroelasticity, autonomous systems, biomechanics and biomaterials, computation and artificial intelligence, energy systems, and materials, and soft matter and nanoscale materials. MS and PhD programs of study are highly flexible to meet individual needs.

Academic Requirements

10 Courses

- 5 Core courses (4 ME courses and 1 qualifying MATH/STA course, all 500-level or above)
- 5 Elective courses (may include up to 6 credits of independent study)
- Research project or thesis

Medical Physics (MS)

Program Code: G-MPH-MS
Degree Designation: Master of Science
Department: Medical Physics
Website: medicalphysics.duke.edu

Program Summary

Medical physics is a field that applies principles of physics to the clinical needs of medicine and healthcare. It has been instrumental in the development of the medical fields of radiology, radiation oncology, and nuclear medicine. The Medical Physics Program offers both an MS and a PhD degree, organized into four academic tracks: diagnostic imaging physics, radiation oncology physics, nuclear medicine physics, and medical health physics. Graduates are trained for employment opportunities in academic settings, clinical service, industry, government labs, and consulting.

The Medical Physics Program is a collaborative interdisciplinary program with faculty from the Departments of Radiology, Radiation Oncology, Occupational and Environmental Safety (health physics), Biomedical and Electrical Engineering, and Physics with current research interests focused on: magnetic resonance imaging and microscopy, advanced digital imaging instrumentation and algorithms, detector and display characterization, computer-aided diagnosis, ultrasound, monoclonal antibody imaging and therapy, intensity modulated radiation therapy, on-board imaging in radiation therapy, SPECT and PET imaging, neutron and X-ray scatter imaging, radiomics and big-data, machine learning, and dosimetry.

The Duke Medical Physics program is accredited by the Council on Accreditation of Medical Physics Educational Programs (CAMPEP).

Academic Requirements

All students take core courses focused on topics from all four academic tracks in the first year, followed by concentration-specific courses in their chosen major track of study, which includes practical clinical training and more advanced didactic courses. MS students can pursue either a thesis or a scholarship research project during their two years.

Medical Physics—Duke Kunshan University (MS)

Program Code: K-MPH-MS
Degree Designation: Master of Science
Department: Medical Physics
Website: medicalphysics.dukekunshan.edu.cn

Program Summary

Medical physics is a discipline that applies physics to the needs of medicine, and has been instrumental in the development of the medical fields of radiology, radiation oncology, and nuclear medicine. The medical physics graduate program offers an MS degree, and is organized into three academic tracks: diagnostic imaging physics, radiation oncology physics, and nuclear medicine physics. Graduates are trained for employment opportunities in academic settings, clinical service, industry, or government labs. The medical physics program is a collaborative interdisciplinary program, and the faculty is drawn from Duke Kunshan University and from sponsoring departments of the medical physics program at Duke University, which are radiology, radiation oncology, occupational and environmental safety (health physics), biomedical engineering, and physics. MS thesis projects may be performed with co-advisors from Duke Kunshan University and the medical physics program at Duke University. Current research interests of the faculty include magnetic resonance imaging and microscopy, advanced digital imaging instrumentation and algorithms, detector and display characterization, computer-aided diagnosis, ultrasound, monoclonal antibody imaging and therapy, intensity modulated radiation therapy, on-board imaging in radiation therapy, SPECT and PET imaging, neutron-stimulated imaging, and dosimetry.

Academic Requirements

All students take common core courses in the first year, followed by concentration in a major track of study. The first semester of the second year is on the Duke University campus in Durham, North Carolina, where students attend classes and work on MS thesis research. The summer between first and second years may also be on the Durham campus, working on MS thesis research.

Political Science (AM)

Program Code: G-POLI-AM
Degree Designation: Master of Arts
Department: Political Science Department
Website: polisci.duke.edu/graduate/ma

Program Summary

The Department of Political Science offers graduate work leading to the MA and PhD in political science.

Instruction is designed to prepare the student primarily for teaching and research. Instruction is currently offered in the following fields: political economy; behavior and identity; security, peace, and conflict; political methodology; normative political theory and political philosophy; and political institutions.

Further details on the Graduate Program in Political Science, the departmental facilities, the staff, and available financial aid may be obtained from the director of graduate studies, Department of Political Science.

Academic Requirements

The terminal degree of master of arts is awarded following successful completion of (1) eight one-semester courses of 3-course credits each, at least half of which must be in political science; (2) six-course credits of ungraded research (thesis option) or two additional courses of 3-course credits each (non-thesis option); 3) complete and defend a thesis or a non-thesis portfolio of two research papers completed during the students' coursework. In addition, candidates for the degree must demonstrate competence in one foreign language or statistics.

These requirements for the degree apply both to students enrolled in the terminal program and to students originally enrolled in the PhD program who decide to end their involvement in the PhD program with a terminal degree.

Population Health Sciences (MS)

Program Code: G-PHS-MS
Degree Designation: Master of Science
Department: Population Health Sciences
Website: populationhealth.duke.edu

Program Summary

The Department of Population Health Sciences offers a Master of Science in Population Health Sciences, which provides a solid methodological and analytical foundation across broad population health sciences concepts, including basic study design, determinants of health, health disparities, implementation and evaluation, and policies and systems. The program consists of coursework, collaborative research projects, and hands-on experience. Students take advanced classes in applied analytics methods, foundational courses in population health sciences, research methods, and study design along with four electives. Real-world experience comes from a year-long capstone project during which students complete an internship and write a master's paper. The program requires professional development seminars on topics including leadership and professional adaptability, networking, and communication techniques, having a professional presence, and US employer expectations. Broadly, it is expected that students entering the MS Program in Population Health Sciences should have a background or strong interest in the social sciences, quantitative sciences, and health care.

Academic Requirements

Coursework includes 40 units over four semesters, including required Graduate School training in Academic Integrity and Responsible Conduct of Research (AIRCR) and 12 electives credits, a minimum of 6 of which must be taken in DPHS.

- Year 1
  - Fall 11 credits
    - POPHS 701: Applied Analytic Methods I (3 credits)
    - POPHS 703: Statistical Programming for Population Health Sciences I (1 credit)
    - POPHS 705: Topics in Population Health Sciences I (3 credits)
    - POPHS 707: Research Methods & Study Design I (3 credits)
    - POPHS 709: Professional Development (1 credit)
  - Spring 11 credits
    - POPHS 702: Applied Analytic Methods II (3 credits)
    - POPHS 704: Statistical Programming for Population Health Sciences II (1 credit)
    - POPHS 706: Topics in Population Health Sciences II (3 credits)
    - POPHS 708: Research Methods & Study Design II (3 credits)
    - POPHS 710: Professional Development (1 credit)
- Year 2
  - Fall 9 credits
    - Elective (3 credits)
    - Elective (3 credits)
    - POPHS 751: Capstone Project (3 credits)
  - Spring 9 credits
    - Elective (3 credits)
    - Elective (3 credits)
    - POPHS 752: Capstone Project (3 credits)

Quantitative Financial Economics (MS)

Program Code: G-QFE-MS
Degree Designation: Master of Science
Department: Economics Department
Website: gradschool.duke.edu/academics/programs-degrees/quantitative-financial-economics

Program Summary

Students preparing to enter the Quantitative Financial Economics Program will find an undergraduate background in mathematics, engineering, computer science, statistics, and economics to be very helpful. It is designed to train and develop quantitative skills linked to economics, finance, and related areas to prepare graduates for PhD studies or related professions. Graduates will be awarded an MS in quantitative financial economics as their degree.

Academic Requirements

The MQFE program requires a minimum of 30 graded course credits in financial economics and related fields. Students' course selections are based on their specific interests and on recommendations made by their academic advisors in order to meet their longer-run goals. Courses offered through The Graduate School—those listed under the subject Graduate Studies (GS)—do not count toward the 30-course credit requirement.

All MQFE students must complete five core courses (15 course credits) offered by the Economics department; the following 3 credit classes: Economics 571, 623, 672, and 676; and the following 1.5 credit classes: 882: Finance in Macroeconomics, and Economics 885: Continuous Time Finance. Students must also complete a combination of five electives (15 course credits), which may include: Economics 514, 573, 590: Regulation & Ethics in Financial Markets, 674, 883: Time Series. Certain other Master's level economics courses (500-699) and PhD-level economics courses (700-999), as well as 900-level finance courses at Fuqua. Certain courses in the Mathematics, Computer Science, and Statistics departments may also be taken for elective credit with advance approval from the student's advisor. Students must also complete a Capstone course from among a list of approved such courses.

Each student has a completion meeting with their committee, involving presentation and discussion of either a portfolio of completed work from course projects and papers, and/or a summary of applied work from an internship, and/or an independent study project mentored by a faculty member. The completion exercise will be reviewed and approved for master's credit by the student's faculty advisor in conjunction with the MQFE director. Each student will be expected to submit a hard copy of the portfolio to the committee two weeks prior to the completion date.

Religious Studies (AM)

Program Code: G-REL-AM
Degree Designation: Master of Arts
Department: Trinity College of Arts & Sciences
Website: religiousstudies.duke.edu/graduate/ma

Program Summary

The MA in Religious Studies attracts a variety of applicants including recent Religious Studies graduates who have not yet decided on their careers, graduates in other fields who have an interest in religion, and local professionals who wish to expand their horizons by pursuing graduate studies in Religion. While some graduates of this program may choose to apply for PhD studies in Religion at Duke, application to the PhD program is a separate process. No guarantees for admission to the PhD program are granted or implied by completion of the MA Program in Religious Studies.

Writing samples are not required, but if applicants wish to include one, it should be between 10 and 15 pages long.

Academic Requirements

30 Units of Credits Achieved One of Two Ways

- Thesis Option
    - 8 courses (24 units)
    - 2 research components (6 units)
        - The 2 research components are devoted to research carried out under the supervision of a Department of Religious Studies faculty member.
    - Master's thesis
        - A Master's thesis must be defended before an examination committee of 3 members or more. (A Department faculty member will serve as the chair of this examination committee.)

or

- Research Paper Option
    - 10 courses (30 units)
    - 2 Research Papers
        - 2 of the courses must include writing a research paper, and at least 1 of these supervised by a Department faculty member
        - Both papers must have been graded B or better
        - The 2 research papers must be defended before an examination committee of 3 - 4 members. (A Department faculty member will serve as the chair of this examination committee, and the committee must be comprised of at least 2 Religious Studies faculty and a majority of Duke faculty.) See the DGSA for questions about committees.

You must select your preferred option before the beginning of the penultimate semester. At that point, you must complete a form indicating your choice, as well as information regarding your proposed writings and examination committee members.

Course Requirements for Both Options Listed Above:

- 6 of the courses (18 units) focused on Religious Studies, and 5 of them (15 units) should be taken in the Department (including cross-listed courses).
- RELIGION 912 (Theorizing Religion) or a graduate-level equivalent that must be approved by the current instructor of RELIGION 912.
- All courses must be at the 500 level or higher.

- 2 courses may be taken at the University of North Carolina at Chapel Hill (based on the collaboration agreement between Duke and UNC-CH)

Slavic and Eurasian Studies (AM)

Program Code: G-SLAV-AM
Degree Designation: Master of Arts
Department: Slavic and Eurasian Studies
Website: slaviceurasian.duke.edu/graduate

Program Summary

The Department of Slavic and Eurasian Studies offers graduate work leading to the MA in Russian literature and culture, Slavic linguistics, and Slavic and Eurasian studies.

Beyond the strong commitment to improving and diversifying the language proficiency of its students and giving them solid training in research, the faculty of the department prepare students in a variety of adjacent fields, such as art history, cultural anthropology, cultural studies, economics, film, gender studies, history, legal studies, linguistics, literary studies, political science, religion, theater studies, translation, and visual and informational studies. All entering students must demonstrate advanced knowledge of Russian or another Eurasian language.

Further information about the graduate programs, including specific requirements, can be obtained from the director of graduate studies.

Academic Requirements

MA candidates who are in residence should complete all requirements within two calendar years of their first registration. All MA candidates must achieve language proficiency that is the equivalent of five years of Russian language instruction, complete 10 courses (30 graduate units), and complete and defend an MA thesis. 8 courses (24 graduate units) must be graded courses with at most 2 courses below 200-level, to include a) at least 6 courses related to Russian culture and b) 2 courses in a two-semester sequence of a non-Russian Slavic and Eurasian language or courses in a non-Russian area of Slavic and Eurasian Studies. All courses must be chosen in consultation with the Director of Graduate Studies. MA candidates are encouraged to explore the areas of interest offered by the faculty of the department. Successful completion of an MA thesis includes two semesters of MA thesis hours, which is the equivalent of 2 courses (6 graduate units), supervised by a thesis advisor, writing an MA thesis in the form of a substantial research paper with an original research topic, and defending this thesis in an oral exam before a thesis committee composed of the thesis advisor and two other members. Graduating students must show Russian-language proficiency at the B2 CEFR level or higher.

Further information about the graduate programs, including specific requirements, can be obtained from the director of graduate studies.

Statistical Science (MS)

Program Code: G-STA-MS
Degree Designation: Master of Science
Department: Statistical Science
Website: stat.duke.edu/ms

Program Summary

The master's in statistical science (MSS) program provides rigorous training in core areas such as predictive modeling, Bayesian methods, machine learning, computational statistics, and modern data analytics. Emphasizing interdisciplinary applications, the program prepares students to work at the forefront of research and practice in academic, industry, and nonprofit settings.

The MSS is closely integrated with the research programs of Duke's Statistical Science faculty, offering students exposure to ongoing innovation and scholarly leadership. The program serves both as a strong foundation for professional careers in statistical and data science and as a pathway to doctoral studies for those pursuing advanced research.

For a current faculty list and description of graduate programs in statistical science, visit the website: stat.duke.edu/ms.

Academic Requirements

Coursework

- 36 credits: 24 graded STA; 3-6 graded/ungraded STA; 6-9 STA or non-STA
- The MSS Core is a set of six required 3-credit courses on models & methods, theory, computing, and practice, plus a 1-credit pro-seminar. A student with substantial prior coursework in one or more of these may be permitted to substitute an alternate, more advanced course with the approval of their advisor and the Master's Director (MSD) prior to registration.
    - STA 521L. Predictive Modeling and Statistical Learning
    - STA 523L. Programming for Statistical Science
    - STA 532. Theory of Statistical Inference
    - STA 581. ProSeminar: Becoming a Professional Statistician
    - STA 602L. Bayesian and Modern Statistical Data Analysis

    - STA 610L. Multilevel and Hierarchical Models
    - STA 663L. Statistical Computing and Computation
- MSS Electives offer a diverse range of advanced and special topics, including advanced courses specific to the STA MSS program.
- External Electives are graduate level courses related to a student's program offered by other academic departments at Duke University. A list of approved non-STA electives is on the departmental website. If a student wishes to use a course that is not on the list, the student must request approval from the Master's Director (MSD) prior to registration. The procedure for these requests is outlined on the department's website.

Completion Exercise

Students have three options for their required completion exercise: a Portfolio of Work presentation, a Capstone presentation, or a Master's Thesis. Students planning to write a thesis must begin early work on their research to meet the thesis deadline. More detail can be found on the department's website: stat.duke.edu/ms/mss-completion-exercise.

Master of Arts in Teaching (MAT)

Program Code: G-MAT-MAT
Degree Designation: Master of Arts in Teaching
Department: Master of Arts in Teaching
Website: educationprogram.duke.edu/MAT

Program Summary

Duke University's Master of Arts in Teaching program is an accelerated teacher preparation and licensure program that prepares candidates to enter classrooms as culturally responsive educators equipped with the skills and content knowledge needed to support the learning of all students.

This 12-month program provides pedagogical expertise, and a 27-week internship and prepares candidates for a North Carolina initial teaching license in:

- Secondary English Education
- Secondary Math Education
- Secondary Science Education
- Secondary Social Studies Education

To earn the Master of Arts in Teaching degree, a candidate must have an undergraduate degree in that field or in a field closely related to the selected licensure content area.

Through graduate coursework and intensive clinical experience, teacher candidates develop skills and content knowledge to equip them as effective culturally responsive educators.

More information on the program is available from the MAT website or by email at MAT-Program@duke.edu.

Academic Requirements

The MAT program provides talented candidates with a challenging program of study within their academic discipline while preparing them for careers as secondary school teachers. The program combines graduate coursework and a 27-week internship under the direction of highly effective mentor teachers. The 36-credit-hour program takes one calendar year to complete, beginning during summer session II and ending at the conclusion of summer session I the following year.

Course Requirements

- **Summer II**
    - MAT 702: Educating Adolescents (3 hrs.)
    - MAT 703: Effective Teaching Practices and Strategies (3 hrs.)
- **Fall**
    - MAT 741: Student Teaching Internship (4 hrs.)
    - MAT 743: Culturally Responsive Teaching (2 hrs.)
    - MAT 748: Assessment, Evaluation and Educational Technology (3 hrs.)
    - MAT 749: Differentiated Instruction and Diverse Learners (3 hrs.)
- **Spring**
    - MAT 742: Student Teaching Internship (6 hrs.)
    - MAT 744: Leading Through Teaching (3 hrs.)
    - MAT Content Course (3 hrs.)
- **Summer I**
    - MAT 746: Advanced Methods and Materials for Teaching Secondary - Humanities (English and social studies teacher candidates)
    - MAT 747: Advanced Methods and Materials for Teaching Secondary - STEM (science and math teacher candidates)
    - MAT Content Course (3 hrs.)

Advanced Quantitative Methods in the Social Sciences Certificate

Program Code: G-QMS-C
Degree Designation: Certificate
Department: Graduate School
Website: ssri.duke.edu/program-for-advanced-research-in-the-social-sciences-pariss

Program Summary

The central mission of the graduate certificate in advanced quantitative methods in the social sciences is to provide interested doctoral students with a coherent and integrated understanding of quantitative approaches in the social sciences. The program is intended for doctoral students from any department or school who have an interest in research in the social sciences. The goal is to provide advanced training in quantitative methods in an interdisciplinary context to facilitate research without regard to discipline and communication across disciplinary boundaries. Applications are typically made late in the second year or in the third year.

Academic Requirements

- Four graduate-level, interdisciplinary courses in social sciences.
- Mathematics and Mathematical Statistics: All candidates must demonstrate competence in basic mathematics, equivalent to completion of a basic course or series of courses in multivariate calculus, linear algebra, and probability theory through Statistics 611 or Economics 703.
- Research Design: All candidates must have the equivalent of a course in the fundamental principles of research design, typically acquired through training within the home department, such as Political Science 731 or 732, Psychology 718S, or Sociology 702 and 720S.
- Formal Modeling and Derivation of Hypotheses: All candidates must achieve competence in formal modeling. The expectation is that the student will have training at least at the equivalent of a micro-economics course in economics. The most preferred course is Economics 705 depending on the applicant's objectives (e.g., Political Science 631L, Psychology 749/750, Sociology 702, or Business Administration 513).
- Hypothesis Testing: All candidates must achieve competence in the testing of hypotheses. This can be satisfied by successful completion of Statistics 601 or 831. In addition, applicants may ask that the board accept a disciplinary equivalent (currently taught examples include Economics 707, Political Science 630, Psychology 720, and Sociology 723).
- Advanced, Interdisciplinary Knowledge: A minimum of two courses—the equivalent of a year-long training—in one or more advanced, interdisciplinary topics of special interest to the student (all courses being outside the individual's own department and ordinarily unavailable within it), plus the Program for Advanced Research in the Social Sciences capstone course.

African & African American Studies Certificate

Program Code: G-AFRI-C
Degree Designation: Certificate
Department: African & African American Studies Program
Website: aaas.duke.edu/graduate-certificate

Program Summary

We offer a Graduate Certificate in African & African American Studies for students enrolled in doctoral and master's programs at Duke. The curriculum includes coursework, teaching, and research. The award of a graduate certificate is carried on the student's official transcript upon completion of the program. Students enrolled in the graduate program are eligible to apply for AAAS teaching assistantships and research funds.

Graduate students enrolled in the program are encouraged to participate in all African & African American Studies program events, including the program's lecture series and symposia. African & African American Studies at Duke has a specific interdisciplinary focus on Diaspora Studies and Gender Studies. This emphasis characterizes both our faculty's strength and the curriculum's critical interdisciplinary strategy. AAAS at Duke University is committed to a new model of Black Studies, one which sees race as inevitably intertwined with other social hierarchies, and one which forces attention to continuities and disjunctures of social experience across the Diaspora.

For further information regarding application and enrollment in the graduate certificate Program in African and African American Studies, contact the department's director of graduate studies or visit the website.

Academic Requirements

Requirements for PhD Students

- AAAS 699S (Proseminar)
- Three additional graduate-level courses (500-level or above), two of which must be taught by AAAS core or secondary faculty. If not an AAAS course or a course cross-listed with AAAS, then the third course must be approved by the DGS.

- Select either Option A, B, or C:
    - Option A: Teaching an AAAS undergraduate course OR serving as a teaching assistant. Assistantships must be supervised by an AAAS core or secondary faculty member to be eligible for certificate credit. Instructorships must be sponsored by AAAS or approved by the DGS if the student is seeking credit for the course.
    - Option B: A fourth graduate course, excluding the Proseminar. If the course emanates from outside AAAS, approval must be sought from the DGS.
    - Option C: The development of a course proposal and syllabus for an AAAS course. The proposal and syllabus must be approved by an AAAS core or secondary faculty member.
- Dissertation: A dissertation in an AAAS area with core or secondary faculty represented on the dissertation committee.

Requirements for Master's Students

- AAAS 699S (Proseminar)
- Two additional graduate-level courses (500-level or above) taught by AAAS core or secondary faculty member
- Independent Study: An AAAS independent study which must be developed in association with an AAAS core or secondary faculty member OR a third graduate-level (500-level or above) course
- Thesis/Project: A final thesis/project (GLS courses that address an aspect of the program's scholarly mission must be approved in advance by the DGS). An AAAS core or secondary faculty member must serve as the final reader of the thesis/project or as an examiner in its final review.

Anthropology & History Certificate

Program Code: G-ANHT-CER
Degree Designation: Certificate
Department: Anthropology & History

Program Summary

For several decades, historians have been turning to cultural anthropology, and anthropologists to history, for methodological guidance. By now a relatively large number of historians and anthropologists work within a shared framework, asking similar questions, and seeking answers to these questions from similar kinds of evidence. In both disciplines, it is widely understood that cultural diversity and cultural change cannot be accounted for either by the traditional narrative techniques of historians or by the traditional ethnographic descriptions of anthropologists. Instead, historians realize they must look beyond action, intention, and event, to underlying patterns, unspoken presuppositions, institutional, and discursive structures. Anthropologists realize that kinship, ritual, social role, discourse, and belief are all subject to improvisation, contestation, politicization, and thus change. Scholars in both disciplines have looked to practice theory, as developed by Bourdieu, Giddens, Ortner, and Sewell; to postcolonial studies, as developed by Stoler, Dirks, Spivak, Das, and Burton; to performance theory, as developed by Sahlins, Butler, Sedgwick; and to other, related approaches.

Drawing on these streams of theory, anthropologists and historians strive to come to grips with the full implications of cultural diversity and change. The challenge is to understand what all actors in a given context consciously know and intend as well as what they unconsciously take for granted, what they do on purpose and what they do without reflection, and to see how action and conflict have both intended and unintended consequences. One goal of such research is a new kind of total history, of the kind the Comaroffs have attempted for South Africa. Another goal is the recovery of forgotten or suppressed pathways to meaning of the kind rescued from oblivion by recent work on indigenous sexuality in colonial Mexico or Spanish judicial repression in colonial Peru. Still, another is the exploration of historical change in "affect," the seemingly automatic responses to situations that often encode cultural assumptions and set the parameters of meaning and action. Still another is the extension of ethnographic understandings to the materials of Western history, and the history of anthropology itself.

Collaboration between the faculty of the history and cultural anthropology departments at Duke has been active since the 1980s. Numerous cross-listed graduate seminars and joint work on graduate preliminary examination committees and dissertation defense committees have testified to the vital role of this collaboration for graduate training over the years.

This collaboration has now been formalized with a certificate program to ensure that students who wish to draw on the other discipline gain familiarity with the joint methods of both disciplines in a more systematic way. Students will also receive a tangible token in recognition of their accomplishments.

Students enrolled in the PhD programs of either cultural anthropology or history wishing to earn a certificate in anthropology and history must designate a mentor from among the affiliated faculty of the certificate program. With their mentors, students will draw up a coherent program of study leading to the certificate.

Academic Requirements

Students must designate a mentor from the affiliated faculty of the certificate program. With their mentor, students must draw up a program of study that must include:

- Completion of a core graduate seminar:
    - with two-semester sequence beginning with required graduate-level History and Cultural Anthropology (Anthropology and History); and
    - concluding with—research seminar in which students prepare and present their own papers.

- Participation (while in residence) in an anthropology and history colloquium to be organized by the affiliated faculty and the students.
- One presentation of the student's own work at the colloquium, usually during the writing phase of the dissertation.
- At least two other courses in the nondegree department.
- Capstone research paper (if in history, this may be a part of the student's portfolio).
- Preliminary examination field in the nondegree discipline.

The director of graduate studies in each department, assisted by one member of the affiliated faculty from each department, will monitor the student's progress and review their dossier at least once annually.

Biomolecular and Tissue Engineering Certificate

Program Code: G-BTE-C
Degree Designation: Certificate
Department: Cellular and Biosurface Engineering
Website: cbte.pratt.duke.edu/certificate/how-to-apply

Program Summary

The University Program in Biomolecular and Tissue Engineering is a multidisciplinary certificate program that integrates activities in engineering, the life sciences, and medicine. Duke's Center for Biomolecular & Tissue Engineering (CBTE) Faculty brings together broad expertise from the academic, training, research, and clinical departments of Duke University's Medical Center, Duke's Trinity College of Arts & Sciences, and the School of Medicine. Faculty have primary or secondary appointments in at least one of these degree-granting academic departments, centers groups, and/or training programs: Biochemistry, Biomedical Engineering, Biostatistics & Bioinformatics, Cell Biology, Cell & Molecular Biology Training Program, Chemistry, Civil & Environmental Engineering, Computational Biology & Bioinformatics Training Program, Developmental & Stem Cell Biology Program, Mechanical Engineering & Materials Science, Medicine, Molecular Cancer Biology Training Program, Ophthalmology, Orthopaedic Surgery, Pathology Training Program, Pharmacology & Cancer Biology, Pharmacological Sciences Training Program, Radiation Oncology, Surgery, University Program in Genetics & Genomics.

The program emphasizes research, graduate education, and interactions with industry. The program's research focus is upon the action of proteins, cells, and tissues with materials and drugs in natural biological processes, and in the medical diagnosis and therapy. It applies the principles and experimental methods of engineering to improve the understanding of these phenomena, and uses this knowledge to develop solutions to practical as well as fundamental problems. The CBTE is not an admitting program. As a non-admitting program, the CBTE draws students from other admitting pre-doctoral programs at Duke University in Engineering, Arts & Sciences, and Medicine. All trainees are subject to the degree requirements of the university and their home department.

The University Program in Biomolecular and Tissue Engineering offers a certificate of graduate study. The requirements for the certificate include completion of one laboratory based class in modern biotechnology, two semesters of Biological Engineering Seminar Series, BTE electives, two non-engineering biomedical science classes, and two grant mock study sections. Additional requirements include Kewaunee Annual Lecture, Responsible Conduct of Research (RCR) training, annual 1:1 meeting with the CBTE Program Director, and CBTE chalk talks. A NIGMS biotechnology training grant offers stipends, tuition, and fees to a number of BTE predoctoral fellows.

For more information, email CBTE-admin@duke.edu or visit the website.

Academic Requirements

Requirements (Engineering Student)

- Two semesters credit of Biological Engineering Seminar Series
    - CBTE Fellows take *four* semesters
- Four BTE Electives
- Two non–engineering biomedical science classes
- Biostatistics class: Either BME733 or BME890
- participation in BTE activities, such as Annual Kewaunee Lecture, chalk talks, and annual 1:1 meeting with CBTE Program Director

Requirements (Non-Engineering Student)

- Two semesters credit of Biological Engineering Seminar Series
    - CBTE Fellows take *four* semesters
- Two BTE Electives
- Two non–engineering biomedical science classes
- Biostatistics class: Either BME733 or BME890
- participation in BTE activities, such as Annual Kewaunee Lecture, chalk talks, and annual 1:1 meeting with CBTE Program Director

Cognitive Neuroscience Certificate

Program Code: G-CNS-C
Degree Designation: Certificate
Department: Cognitive Neuroscience
Website: dibs.duke.edu/education/graduate/certificate-cognitive-neuroscience

Program Summary

Students who matriculate directly into a PhD-granting departmental program have the opportunity to acquire training in cognitive neuroscience at Duke by means of a certificate program in the field. This program is designed for students whose interests are more focused on studies present within a particular department, but who want to also include training in cognitive neuroscience in their graduate program. In addition to the curricular requirements of their home department, students in the certificate program complete a core course in cognitive neuroscience and participate in relevant seminars and journal clubs, including giving a research talk. To enroll in the Cognitive Neuroscience Certificate Program, students must first be admitted to one of the participating departments (see each department's listing for additional information) and then contact the director of graduate studies.

Academic Requirements

- Must first be admitted to a participating department, i.e., psychology and neuroscience, neurobiology, philosophy, computer science, evolutionary anthropology, or biomedical engineering. For information regarding application to the above departments see their individual websites.
- Must complete a core course in cognitive neuroscience
- Participate in relevant seminars and journal clubs, including giving a research talk
- Complete curricular requirements of their home department

Certificate in College Teaching

Program Code: G-CCT-C
Degree Designation: Certificate
Department: Graduate School
Website: gradschool.duke.edu/professional-development/programs/certificate-college-teaching

Program Summary

The Certificate in College Teaching (CCT) Program, administered within The Graduate School, is available for enrolled PhD students in any department or program of study. This program makes use of both departmental training and resources as well as The Graduate School programming. The certificate in college teaching is being offered in order to recognize and validate professional development activities undertaken by PhD students and add competitiveness and value to PhDs awarded to Duke graduate students.

The goals of the CCT program are to facilitate and recognize graduate students' completion of

- sustained, systematic pedagogical training that promotes;
- current best practices in teaching and learning;
- appropriate use of instructional technology;
- systematic assessment of student learning outcomes;
- a reflective teaching practice including peer observation; and
- development of materials suitable for use in applying for teaching positions after graduation.

Application Information

Applications can be made at any time for the program, which should take about a year to complete; this may vary, though, as opportunities for gaining teaching experience vary across departments. Typically, PhD students close to or beyond their prelims (or equivalent) would be well-situated to enroll. However, if students have teaching responsibilities early in their program (as in the first or second year), it would make sense to enroll then. The latest that an application can be made is before Drop/Add of the semester in which a PhD student intends to graduate; a much earlier application (as in at least a year or more before) is recommended.

Academic Requirements

Coursework

Participants should successfully complete two courses in college teaching. This can include any combination of The Graduate School and/or discipline specific pedagogy courses offered by a department or program.

- Graduate Studies courses
    - Graduate Studies 745: Oral Communication for International Teaching Assistants (parallel course to Graduate Studies 750)
    - Graduate Studies 750: Fundamentals of College Teaching

    - Graduate Studies 755: College Teaching and Course Design (syllabus & materials design, teaching statement)
    - Graduate Studies 760: College Teaching and Visual Communication (graphic and web design for teaching)
    - Graduate Studies 762: Online College Teaching
    - Graduate Studies 765: College Teaching Practicum (video recorded teaching demos)
    - Graduate Studies 770: Topics and Careers in Higher Education (job application materials)
- Departmental pedagogy courses
    - African and African American Studies 780S: Teaching Race, Teaching Gender (cross-listed in Gender, Sexuality, and Feminist Studies, History, and Literature)
    - Biology 705S: Seminar in Teaching College Biology
    - English 890S: 21st Century Literacies: Digital Knowledge, Digital Humanities (cross-listed in Information Science + Studies)
    - English 996: Teaching College English
    - Environment 737: Environmental Education and Interpretation
    - Environment 865SA: Teaching and Course Design (DUML)
    - German 700S: Foreign Language Pedagogy: Theories and Practices
    - History 703S: Focusing on Teaching and Pedagogy
    - Information Science + Studies 640: History and Future of Higher Education
    - Math 771S: Teaching College Mathematics
    - Nursing 543: Facilitating Student Learning (online)
    - Nursing 545: Integrating Technology into Nursing Education (online)
    - Nursing 546: Innovative Curriculum Development in Nursing (online)
    - Nursing 547: Educational Program Evaluation and Accreditation (online)
    - Nursing 548: Test Construction and Item Analysis (online)
    - Nursing 549: Using Qualitative Assessment and Evaluation Strategies (online)
    - Nursing 550: Role of the Nurse Educator: Issues and Challenges (online)
    - Philosophy 795S: Teaching Philosophy
    - Political Science 790: Teaching Politics
    - Religion 996S: Teaching in Religion
    - Religion 885: The Study of Asian Religions (UNC)
    - Romance Studies 700: Theories and Techniques of Teaching Foreign Languages
    - Russian 714: Methods in Teaching Russian
    - Statistical Science 790: Special Topics (Teaching Statistics)
    - Gender, Sexuality, and Feminist Studies 820S: The Pedagogy of Women's Studies

Teaching Experience and Observation

Participants should have formal experience teaching a group of students over the course of a term in a classroom or lab setting. Depending on the discipline and department, this could include serving as a teaching assistant with appropriate teaching responsibilities, leading a recitation section or lab, being a co-instructor of a course, or being the primary instructor of record. With the approval of the CCT program director, other types of teaching experience may be used to fulfill this program requirement.

Students in the program should participate in teaching observations, both as a teacher being observed and as an observer of others teaching. In their teaching role, participants should be observed by at least two who provide brief written feedback. Observers can be faculty from the participant's department or a related program, The Graduate School staff, trained peer graduate students, or others as approved by the program director. Participants should also conduct at least two observations of other faculty or graduate students teaching.

Online Teaching Portfolio

The online teaching portfolio can be created in any web authoring tool the participant is comfortable using (Word Press, Dreamweaver, Google Sites, etc.) It may include a current CV, a teaching statement, and other materials as appropriate to the student's discipline. Note that students will create portfolio materials in the college teaching classes and as part of their teaching experience as described above in requirements one and two.

Computational Biology and Bioinformatics Certificate

Program Code: G-CBB-CER
Degree Designation: Certificate
Department: Bio Genome Project
Website: medschool.duke.edu/education/biomedical-phd-programs/computational-biology-and-bioinformatics-program/program-2

Program Summary

The Certificate Program in Computational Biology and Bioinformatics is intended for Duke students enrolled in departmental PhD programs who wish to expand their current studies to apply to or include the fields of computational biology and bioinformatics.

Academic Requirements

A student may qualify for the certificate program after completing the following course of study: two out of the three core courses (Computational Biology and Bioinformatics 520, 540, or 561/662/663); one additional computational biology and bioinformatics course and registration for Computational Biology and Bioinformatics 510S seminar for every semester except the semester of graduation.

Developmental Psychology Certificate

Program Code: G-PSYD-C
Degree Designation: Certificate
Department: Psychology Department
Website: psychandneuro.duke.edu/graduate/developmental

Program Summary

The facilities in developmental psychology at Duke University and The University of North Carolina at Chapel Hill offer a collaborative approach to graduate training in developmental psychology: the UNC-Duke Collaborative Graduate Certificate Program in Developmental Psychology. Graduate students in the doctoral programs in psychology and neuroscience at Duke and students in UNC's Department of Psychology can apply to this program which offers training opportunities in addition to those of their home department. Students in the certificate program attend developmental talks at both universities and have opportunities to take developmental seminars or engage in supplemental research training with the faculty of their nonhome university. Among the research emphases of the participating faculty are cognitive development, social development, applied development, and developmental psychobiology. Students apply to the program by the beginning of their third year of graduate study.

Academic Requirements

- Must attend at least three program-affiliated developmental events per semester at the nonhome institution, for at least six semesters:
    - Center for Developmental Science talks;
    - Center for Child and Family Policy talks;
    - Colloquium series at both universities;
    - Developmental research and current topics groups, which meet regularly at both universities; or
    - Other program-affiliated events in the future.
- Fulfill two of the following:
    - Complete a minimum of two developmentally relevant psychology for-credit courses, taken at the student's nonhome institution (a relevant home institution course cotaught by nonhome institution faculty would count).
    - At least one of the student's major committees (e.g., advisory, comprehensive exam, or dissertation committee) must have at least one member who is on the developmental faculty of the nonhome institution.
    - Participation in a research activity with a developmental faculty member from the nonhome university. May be fulfilled as deemed appropriate by the faculty member providing the experience (e.g., by enrolling in a formal research practicum course, by collaborating on a research project for no course credit, or by employment as a research assistant).

East Asian Studies Certificate

Program Code: G-EAS-C
Degree Designation: Certificate
Department: East Asian Studies
Website: asianpacific.duke.edu/academics-graduate/graduate-east-asian-studies-certificate

Program Summary

Duke's East Asian Studies program offers comprehensive coverage of East Asian politics, societies, history, and cultures, with particular strengths in literature; modern history; comparative history and culture; anthropology; film, media, and visual studies; comparative studies of capitalism; and religious studies. Research on East Asia at Duke is supported by extensive library holdings managed by subject librarians for China, Japan, and Korea. Duke also has close ties with Asian Studies faculty at the University of North Carolina at Chapel Hill (UNC), and students can receive credit for courses at either institution.

Academic Requirements

The certificate requires the completion of four courses from an approved list of courses relating to this region, as well as minimum language proficiency (two years) in an East Asian language.

Gender, Sexuality, and Feminist Studies Certificate

Program Code: G-GSF-C
Degree Designation: Certificate
Department: Gender, Sexuality, and Feminist Studies
Website: gendersexualityfeminist.duke.edu/graduate

Program Summary

The Program in Gender, Sexuality, and Feminist Studies at Duke University is dedicated to exploring gender identifications, relations, practices, theories, and institutions. In the field's first decades, feminist scholarship reoriented traditional disciplines toward the study of women and gender and developed new methodologies and critical vocabularies that have made interdisciplinarity a key feature of gender, sexuality, and feminist studies as an autonomous field. Today, scholars continue to explore the meaning and impact of identity as a primary, though by no means transhistorical or universal, way of organizing social life by pursuing an intersectional analysis of gender, race, sexuality, class, and nationality. In the classroom, as in research, the goal of the program is to transform the university's organization of knowledge by reaching across the epistemological and methodological divisions of historical, political, philosophical, economic, representational, technological, and scientific analysis. Through a dual emphasis on interdisciplinarity and intersectionality, the program offers students new knowledge while equipping them with a wide range of analytical and methodological skills.

Many students identify gender, sexuality, and feminist studies courses as among the most exciting and enlightening they take at Duke. The student who enrolls in the program's classes each semester gains the opportunity to understand how social, historical, and psychological forces, organized by the central concept of gender, shape them as individuals; attain a fuller understanding of human behavior, culture, and society made possible by investigating gendered institutions and cultural norms; acquaint themselves with different experiences based on economic class, sexual orientation, race, and cultural and background; and transfer the critical and analytical skills they acquire in the study of gender and society to other classes, beyond the campus to other activities, and eventually to their professional careers.

Gender, sexuality, and feminist studies have, since its inception, been an interdisciplinary field. It has consistently assessed the strengths and challenges of such interdisciplinarity. Duke students find their background in gender, sexuality, and feminist studies to be a valuable resource for their professional development and lifelong intellectual growth. Gender, sexuality, and feminist studies at Duke is a focal point within the university for the study of women, gender, and feminist theories—a structure that allows graduate students to address complex issues beyond their traditional disciplinary and classroom boundaries and to explore problems in ways that connect to the theories and approaches of different disciplines. The Gender, Sexuality, and Feminist Studies Program serves students' intellectual interests by offering credit courses, housing a variety of research projects, and implementing programs for diverse audiences. Graduate students can earn a four-course certificate in feminist studies and are encouraged to teach introductory or special topics courses.

Professional students and doctoral candidates may join the Graduate Scholars Colloquium, a scholarly society that deepens their knowledge of the fields of gender, sexuality, and feminist studies and provides a cohesive, supportive community. All affiliated students on the mailing list receive newsletters, lecture notices, and invitations to special events. For additional information, visit the program website.

Academic Requirements

- One required course: Gender, Sexuality, and Feminist Studies 701S (Foundations in Feminist Theory)
- Two graduate-level courses (600-level or above) in or cross-listed with Gender, Sexuality, and Feminist Studies at Duke (tutorials or Independent Studies do not fulfill this requirement).
- A fourth graduate course or tutorial/independent study (500-level or above) offered by Gender, Sexuality, and Feminist Studies, or another academic unit focusing on women, gender or an intersectional approach to the study of race and/or sexuality. (Any non-gender, sexuality, and feminist studies course or tutorial/independent study must be approved by the director of graduate studies.)
- Women, gender, sexuality, or feminism must be a significant aspect of the preliminary examination or dissertation project.
- A member of the Gender, Sexuality, and Feminist Studies core or secondary (or another member of Duke faculty approved by the DGS) must be on the preliminary examination and dissertation committees. (A complete listing of approved Core and Secondary faculty can be found at gendersexualityfeminist.duke.edu/people/appointed-faculty/primary-faculty).

Note: Audited courses do not count toward the certificate; nor does previously taken MA coursework at Duke or elsewhere.

Global Health Certificate

Program Code: G-GHL-CER
Degree Designation: Certificate
Department: Global Health
Website: globalhealth.duke.edu/programs/graduate-certificate

Program Summary

The global health graduate certificate is an interdisciplinary certificate that provides an opportunity for graduate students from across Duke University to engage in the field of global health through a combination of coursework, research-related field experience (optional), and engagement with peers and faculty. On completion of the graduate certificate, students will be prepared to complement their disciplinary scholarship with interdisciplinary knowledge of foundational global health concepts.

Academic Requirements

The global health certificate requires the completion of three courses and a graduate seminar. Students who complete a pre-approved, field-based experience may have the option to waive one elective course.

The required courses are:

- GLHLTH 701 (Global Health Challenges)
- Two Electives. From a menu of approved options or with approval from the DGHI director of graduate studies.
- GLHLTH 870S (Graduate Seminar). This one-credit advanced seminar for students enrolled in the global health certificate will be a mix of activities, events, and speakers related to engagement in the global health community. A summary paper is also required.
- Field-based Experience * (*Students who complete a pre-approved, field-based experience may have the option to waive one elective course.)

History and Philosophy of Science, Technology, and Medicine Certificate

Program Code: G-HPS-CER
Degree Designation: Certificate
Department: Graduate School
Website: philosophy.duke.edu/research/projects/hps/certificate

Program Summary

The history and philosophy of science, technology, and medicine (HPSTM) program is an interdisciplinary graduate certificate program at Duke University designed to complement and enrich the curricula of graduate students studying history, philosophy, science, engineering, medicine, or other disciplines. The program is administered by the history and philosophy departments, but is wide-ranging and draws participants from evolutionary anthropology, biology, civil and environmental engineering, Classical studies, cultural anthropology, economics, English, Germanic languages and literature, literature, psychology and brain sciences, religion, women's studies, and other Duke departments and programs.

Academic Requirements

- The HPSTM core graduate seminar is taught annually as a cross-listed course in history, literature, philosophy and gender, sexuality, and feminist studies (Literature 521S/History 577S/Philosophy 541S/Gender, Sexuality, and Feminist Studies 541S).
- One elective seminar or directed readings course in the history of science, technology, or medicine.
- One elective seminar or directed readings course in the philosophy of science or the history of the philosophy of science.
- One elective seminar or directed readings course relevant to the students' HPSTM interests.
- Capstone research paper on an HPSTM-related topic.

Information Science + Studies Certificate

Program Code: G-ISS-CER
Degree Designation: Certificate
Department: Information Science + Studies
Website: iss.duke.edu/graduate-certificate-information-science-studies

Program Summary

The purpose of the Information Science + Studies (ISS) graduate certificate is to offer an interdisciplinary program at the graduate level that focuses on the study and creation of new information technologies and the analysis of their impact on art, culture, science, medicine, commerce, society, policy, and the environment. The program is designed for master's and doctoral students wishing to complement their primary disciplinary focus with an interdisciplinary certificate in ISS. The goal of the certificate is to broaden the scope of the typical disciplinary PhD program and to engage the student in related research. The graduate certificate is not intended to provide a disciplinary canon in information science and studies but rather to develop a structured set of transdisciplinary skills and resources for exploring new areas of academic research and teaching. As such, it combines required "skills" and "theory" elements and relevant electives, as well as explicit expectations for engagement with the broader ISS community.

For more information, visit the website or contact the Information Science + Studies Program at iss-info@duke.edu.

Academic Requirements

- Complete the ISS introductory graduate proseminar, ISS 580S: Interdisciplinary Digital Humanities or an equivalent course upon the director of graduate studies approval.
- Demonstration of proficiency through a graduate-level technology practice course or other evidence of competency as approved by the director of graduate studies. Examples may include ISS practice-based courses, participation in lab, projects, or related work.
- Three graduate courses from the approved elective course list (from at least two different departments).
- One formal research presentation coordinated through the ISS director of graduate studies and documented via online website and presentation archive. This may also include a conference presentation or invited talk outside of Duke.
- Participation in at least four research forum events to be tracked by the ISS director of graduate studies and program coordinator. This may include participation in a lab, seminar, workshop, or related activity. It may also include participation in a conference or other gathering outside of Duke.

Graduate Innovation & Entrepreneurship Certificate

Program Code: G-IECP-C
Degree Designation: Certificate
Department: Innovation and Entrepreneurship
Website: entrepreneurship.duke.edu/courses-certificates/graduate-professional-certificate/

Program Summary

The I&E Graduate & Professional Certificate fosters new approaches to research, management, teaching, and leadership, helping students solve pressing problems and prepare for a wide range of career options. Students enrolled in I&E's experiential and interdisciplinary classes will develop innovative ideas based on their field or interests – and then turn those ideas into actionable solutions that can impact society. The skills learned will help make students become creative, action-oriented, and able to navigate the unknown.

Admissions are rolling, and applications and more information can be found on the website.

Academic Requirements

To complete the Graduate/Professional I&E Certificate, students take two electives, a required Business Fundamentals course (I&E 800), and a Narrative Design Seminar (I&E 745). Students must complete all courses by the time they graduate from their primary academic program.

Interdisciplinary European Studies Certificate

Program Code: G-IES-CER
Degree Designation: Certificate
Department: Graduate School
Website: igs.duke.edu/academics/graduate-certificate-interdisciplinary-european-studies

Program Summary

The advances of interdisciplinary studies have made it essential to provide a formal structure through which students from various disciplines in the arts, sciences, and professional schools can obtain some grounding in other academic disciplines. The Duke University Center for International and Global Studies aims to be a pioneer in the interdisciplinary configuration of area studies to work toward an area-based, but not area-bound, perspective. In this context, the Duke University Center for International and Global Studies offers a graduate certificate in Interdisciplinary European Studies. The graduate certificate is open to all advanced degree students who meet the necessary requirements. Students obtaining the certificate may have an advantage in applying for jobs requiring broad teaching across disciplines, areas, and time periods.

If you are interested in learning more about the Interdisciplinary European Studies certificate or enrolling, contact Dr. Giovanni Zanalda at giovanni.zanalda@duke.edu.

Academic Requirements

The following criteria must be met to receive the certificate:

- Five core courses with at least 75% European Studies content taken in at least three different departments.
- Attain competency in one European language other than English, equivalent to at least four semesters of college study (advanced proficiency). The Director of Graduate Studies will approve certification of language competency.
- Attain competency in a second European language other than English, equivalent to at least two semesters of college-level study (intermediate proficiency). The Director of Graduate Studies will approve certification of language competency.
- A significant focus on European Studies-related issues in dissertation work.
- A faculty member with European expertise, from outside of the student's home department, must be appointed to the student's dissertation committee.

Interdisciplinary Medieval and Renaissance Studies Certificate

Program Code: G-MDVL-C
Degree Designation: Certificate
Department: Graduate School
Website: cmrs.trinity.duke.edu/graduate-program

Program Summary

The graduate Program in Medieval and Renaissance Studies is an interdisciplinary program administered by the Duke University Center for Medieval and Renaissance Studies. More than forty faculty in twelve different degree-granting departments participate in the Medieval and Renaissance program, offering courses in art history, history, music, philosophy, religion, and language and literature (Classical Studies, English, German, and romance languages). The Program in Medieval and Renaissance Studies seeks to promote cross- departmental and cross-institutional engagement that gives students a network of colleagues beyond their home departments.

While students may be affiliated with the center without having to obtain the graduate certificate, the certificate is a valuable complement to degrees in traditional Duke departments. Students planning to obtain the certificate should file an application with the Center for Medieval and Renaissance Studies as early in their careers as possible, but no later than the fall of their graduation year.

For an application and more detailed information on the program and its requirements, contact the director of graduate studies or associate director and visit the website.

Academic Requirements

- Complete three Medieval and Renaissance studies courses outside of the major department (discuss with the director of graduate studies and thesis advisor). Courses must be taken for credit. In some cases, courses listed in the student's major department may be counted, for example when they are team-taught by faculty from different disciplines, when they teach research methods or skills relevant to several disciplines, or when they are in a different discipline than that of the student. The director of graduate studies must be consulted in every such case.
- Attend twelve meetings of the Medieval and Renaissance Colloquium. The purpose of the colloquium is to encourage students, before the dissertation-writing stage, to interact with students and faculty in Duke departments beyond their own, and to become part of a broader Medieval and Renaissance studies community at Duke. This colloquium usually meets three times each semester and is led by a range of faculty members or distinguished visiting lecturers.
- Present a research paper at a Medieval and Renaissance studies workshop, colloquia, or conference at a local venue.
- Dissertation on a topic in Medieval and Renaissance studies (late antiquity through the seventeenth century on any region, in any discipline).

Nanoscience Certificate

Program Code: G-NAN-C
Degree Designation: Certificate
Department: Graduate School, Nano Sciences
Website: nano.duke.edu/graduate-program

Program Summary

The mission of the graduate Certificate Program in Nanoscience (CPN) is to educate students in nanoscience disciplines and applications. This graduate certificate program is designed to address the need for an interdisciplinary graduate education in nanoscience that extends beyond the traditional disciplines and skills that are taught within existing departments. In this program, graduate students are educated and mentored in classes, labs, and research projects by faculty from many disciplines. Current focus areas within nanoscience that are currently represented at Duke include (1) synthesis of nanostructured materials, (2) fundamental properties of nanostructured materials, (3) nanodevice fabrication and applications, and (4) advanced characterization of nanostructured materials and devices. The disciplines span the physical sciences, engineering, and biological sciences that are relevant to nanoscience; the program includes faculty from departments within the Trinity College of Arts & Sciences, the Pratt School of Engineering, and the School of Medicine. Member departments include biology, biochemistry, biomedical engineering, cell biology, chemistry, civil and environmental engineering, computer science, electrical and computer engineering, mechanical engineering and materials science, and physics.

Participating departments include biochemistry, biology, biomedical engineering, cellular biology, chemistry, civil and environmental engineering, computer science, electrical and computer engineering, mechanical engineering and materials science, and physics. Students are admitted into existing departments or programs of Duke University, and receive their PhD within those degree-granting units (typically but not exclusively a participating department).

Academic Requirements

- Participation in the Nanoscience Seminar Series
- Three elective courses

Philosophy of Biology Certificate

Program Code: G-PHB-CER
Degree Designation: Certificate
Department: Philosophy of Biology
Website: philosophy.duke.edu/graduate/certificates

Program Summary

The Duke Center for the Philosophy of Biology offers a formal interdisciplinary graduate certificate in the philosophy of biology. The program draws upon coursework and faculty from the Duke departments of biology and philosophy, as well as from those at The University of North Carolina at Chapel Hill and North Carolina State University. It is designed to enable students with substantial backgrounds in one of the two disciplines to learn about the major issues that animate research and scholarship on the intersections between biology and philosophy. The philosophy classes enable students to acquire experience in methods of philosophical analysis and explore the broader philosophical background of problems in the philosophy of biology. The biology classes provide exposure to theoretical questions in biology that raise conceptual issues, to experimental methods and quantitative modeling with substantive and often unarticulated philosophical implications. Students generally apply to the program in their first or second years of doctoral study.

The interdisciplinary certificate will require at least two graduate-level seminars in the philosophy department in philosophy of biology, at least two graduate-level courses in evolutionary and/or developmental biology in the biology department; a directed reading class supervised by a faculty member in the Center for the Philosophy of Biology, which eventuates in a capstone research paper; and regular participation in the philosophy of biology seminar over a two-year period. The certificate will have as prerequisites prior enrollment in at least one 100-level class in the philosophy of science or the philosophy of biology, and at least two courses in biology at the 100 level.

Academic Requirements

Draws resources from Duke philosophy and biology departments, as well as from The University of North Carolina at Chapel Hill and North Carolina State University. Students enter the certificate program during their first or second year of graduate work.

Certificate prerequisites are:

- prior enrollment in a minimum of one 100-level course in the philosophy of science, or philosophy of biology; and
- prior enrollment in at least two 100-level courses in biology;
- two graduate-level seminars in philosophy of biology (philosophy department);
- two graduate-level courses in evolutionary and/or developmental biology (biology department);
- directed reading class supervised by a faculty member in the center;
- capstone research paper; and
- regular seminar participation over a two-year period (philosophy of biology).

Photonics Certificate

Program Code: G-PHT-C
Degree Designation: Certificate
Department: Electrical & Computer Engineering Department
Website: fitzpatrick.duke.edu/education/certificate

Program Summary

The purpose of the graduate Certificate Program in Photonics is to broaden the scope of the typical disciplinary graduate student education program. Students are encouraged to develop interdisciplinary and transferable sets of skills in their coursework and research activities. The program is designed to accommodate both master's of science and PhD students who have been admitted to one of the participating departments. The certificate program helps to guide students toward this broad view by requiring the completion of an introductory course in photonics; three courses from the approved course listing; one formal presentation in the Fitzpatrick Institute Seminar Series; attending at least four Fitzpatrick Institute Seminars a year (as documented by the student's advisor); and if the student is pursuing a PhD, one member of the FIP should be on the PhD dissertation committee.

Academic Requirements

For PhD candidates, one member of the FIP must be on the PhD dissertation committee.

- Certificate accommodates both terminal MS and PhD students who have been admitted to one of the participating departments (biomedical engineering, electrical and computer engineering, computer science, mathematics, chemistry, physics).
- Four photonics courses from the approved course listing, of which one course must be a qualified "Introductory Survey Course" (See the certificate course list at fitzpatrick.duke.edu/education/certificate).
- One research presentation for the Fitzpatrick Institute Student Groups. The director of graduate studies will maintain a list of approved student seminar series.
- Attend one semester of Optics and Photonics Seminar Series (BME 609/ECE 549/PHYSICS 549).

All Courses

AAAS503S - The Black Radical Tradition

Course Description

Cedric Robinson's 'Black Marxism' (1983) has long been taken as foundational to the Black Radical Tradition and specifically Black people's enduring resistances to racial oppression. For Robinson such resistances have not only been legible as class struggle, but as forms of political, spiritual, artistic, intellectual opposition and underground activism. What his work has left unaddressed is the nature of such resistances in gendered terms and in terms that move beyond the United States. This course attempts to expand the definition of what is 'Black' 'Radical' and a 'Tradition' conjoining histories of struggle in South Africa and the US while attentive to their gendered sensibilities.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION503S THE BLACK RADICAL TRADITION, CULANTH503S THE BLACK RADICAL TRADITION, POLSCI589S THE BLACK RADICAL TRADITION, ICS504S THE BLACK RADICAL TRADITION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

AAAS505S - Black Women and Worldmaking

Course Description

The experiences and processes of colonization and empire have been central to the formation and transformation of black lives and worlds in the modern period. This course grapples with the question: how have black women imagined and struggled for alternative worlds not bound by empire and its classed, gendered and racialized strictures? Focusing on black women as worldmakers this course shifts the focus on black imaginaries of freedom away from the masculinist purviews that have predominated to not only center black women but to also ask questions about how this transforms how we understand the very project of black freedom and worldmaking.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

AAAS507S - Atlantic Worlds Workshop

Course Description

This seminar explores the ties of interdependence between Europe, Africa, and the Americas that created an 'Atlantic world' beginning in the fifteenth century. Major topics include European settlement and colonization of the Americas; cultural exchanges among Europeans, Africans, and Indigenous peoples; the rise of the Atlantic slave trade and the transformative effects slavery had on Atlantic societies; the aspirations of the democratic revolutions of the late eighteenth century; and the abolition of slavery and the limits of emancipation. The course is connected to an ongoing workshop series that will give students the opportunity to regularly interact with prominent visiting scholars who will present their current research. Open to both graduate students and advanced undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
HISTORY507S ATLANTIC WORLDS WORKSHOP, CULANTH507S ATLANTIC WORLDS WORKSHOP, LIT508S ATLANTIC WORLDS WORKSHOP, ICS507S ATLANTIC WORLDS WORKSHOP

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

AAAS510S - Global Africa

Course Description
Africa's participation in globalization has not simply been a matter of 'joining the world economy.' Rather, Africa's inclusion has been selective, uneven, and partial. This is quite a different proposition than arguing, as many social theorists, economists, and journalists have suggested that the Continent is somehow structurally irrelevant to the process of globalization. This course responds to this debate by retracing the history of globalization, beginning with the Atlantic trade in human beings and concluding with an account of Africa's place in the global circulation of people things, ideas, and currencies in early twenty-first century.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH561S GLOBAL AFRICA, HISTORY561S GLOBAL AFRICA, POLSCI527S GLOBAL AFRICA, ICS510S GLOBAL AFRICA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (SS) Social Sciences

AAAS511S - Dystopia, Speculation, and the Transhuman: Octavia Butler

Course Description
This course will examine the work of science fiction writer, Octavia Butler. Critically engaging her novels and short stories, we will discover and work through a series of themes and tropes - dys(u)topia, the transhuman, temporality, the apocalyptic, survival, and hierarchical thinking as the root of racism and sexism. We will ask questions in this course about the relationship between sci-fi, speculative fiction, and the imagination of the present. In addition, Butler's fiction, which imagines various forms of miscegenation and interspecial contact, will invite us to deconstruct and re-imagine the figure of the human.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION505S OCTAVIA BUTLER, GSF511S OCTAVIA BUTLER, ENGLISH571S OCTAVIA BUTLER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

AAAS512S - The Fetish: The Role of Things in Spiritual, Economic, and Sexual Life

Course Description
This course explores the social relationships produced by debates over the value and agency of material things ranging from the cross and the Eucharist to black leather, fur, dildos and even the more mundane commodities through which capitalism and socialism have defined their rivalry. Thus we will examine the highly charged role of things in religion, economics, and spiritualized erotic relationships, as well as the centrality of the fetish concept in the mutual transformation of modern Africa and the West.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH511S THE FETISH, RELIGION511S THE FETISH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

AAAS520S - Harlem Renaissance

Course Description
Variously called the 'New Negro Arts Movement,' 'Negro Renaissance,' or 'Harlem Renaissance,' the blossoming of African American arts and letters in the 1920s and 1930s stemmed from multiple sources, motives, and cultural circumstances. The predominantly African American, NYC neighborhood of Harlem became the symbolic capital of the 'New Negro.' But other cities, especially Chicago and Paris, France, were also sites for black creativity in these years. This seminar explores this branch of early 20th century modernism – emanating out of a flowing black cultural diaspora – in its various permutations and artistic forms, with a special emphasis on the visual arts.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST554S HARLEM RENAISSANCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AAAS521S - Black Ethnographers

Course Description
What is ethnography, broadly defined? How is a scholar's ethnographic product shaped by their racialized experience? We will use books, articles, podcasts, documentaries, music, dance, and poetry for an in-depth study of the various ways that U.S.-based Black intellectuals in the social sciences have used ethnography to make sense of and theorize our and their everyday social worlds. We will pay special attention to questions of sexism, anti-Black racism, white supremacy, and colonialism, as these become relevant to the scholars' work, relationships to their disciplinary homes, and lived experiences.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH521S BLACK ETHNOGRAPHERS, GSF521S BLACK ETHNOGRAPHERS, SOCIOL521S BLACK ETHNOGRAPHERS, ICS521S BLACK ETHNOGRAPHERS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

AAAS530S - Third Cinema

Course Description
Exploration of the geopolitics of situatedness and distance as they refer to the film industry, investigating processes of production, distribution, and reception of Hollywood, Third World, and diasporic films, and studying classical and artisanal modes of production in film. Addresses questions of authorship and embodiment; human rights and interventionist filmmaking as they refer themselves to human states of liminality, global movements of populations and capital. Traces the experience of globalization, urbanization, alienation, violence, nostalgia for nature and homeland as represented in the filmic image.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT613S THIRD CINEMA, ICS613S THIRD CINEMA, LATAMER613S THIRD CINEMA, VMS611S THIRD CINEMA, CINE644S THIRD CINEMA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance, (SS) Social Sciences

AAAS531S - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Graduate students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS650S BLACK CAMERA, CINE650S BLACK CAMERA, ARTHIST650S BLACK CAMERA, PHOTO650S BLACK CAMERA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

AAAS532S - Atlantic Worlds

Course Description
Atlantic Worlds examines the conditions under which a specific kind of capitalism emerges in the 21st Century. Organized through speculation and new forms of exploitation beyond the industrial workplace; in prison and military industrial complexes; where debt accrues to a growing global precariat. This new moment in a much longer history of capital is approached in several ways: one, through attention to 1492; two, the legacy of Atlantic slavery; three, current accumulation by dispossession, inclusive of land grab, ecological devastation, and violence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH530S ATLANTIC WORLDS, HISTORY532S ATLANTIC WORLDS, ICS522S ATLANTIC WORLDS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum

AAAS539 - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS545 BLACK CAMERA, CINE545 BLACK CAMERA, ARTHIST539 BLACK CAMERA

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

AAAS544S - Race and American Politics

Course Description
A broad overview of the salience of race in the American political fabric and how it structures racial attitudes on a number of political and policy dimensions.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI525S RACE AND AMERICAN POLITICS, PUBPOL526S RACE AND AMERICAN POLITICS

AAAS545S - Race, Racism, and Democracy

Course Description
The paradox of racial inequality in societies that articulate principles of equality, democratic freedom, and justice for all.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH535S RACE/RACISM/DEMOCRACY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

AAAS550S - Black Culture and Performance

Course Description
What is black embodiment? Black feeling? Black performance? This course explores these questions, among others, by taking up three major cultural movements: New Negro/Harlem Renaissance; Black Arts Movement; and contemporary 'post-blackness.' We will study black drama, performance art, visual art, and film. Major writers and artists might include Marita Bonner, Zora Neale Hurson, Adrienne Kennedy, Alice Childress, Ntozake Shange, Amiri Baraka, Aleshea Harris, Brendan Jacobs-Jenkins, Barry Jenkins, and Jackie Sibblies Drury. We will also read theories of identity formation, racialized experience, and black life, among other prevailing concerns in Black (Performance) Studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
THEATRST550S BLACK CULTURE & PERFORMANCE, ENGLISH550S BLACK CULTURE & PERFORMANCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance

AAAS565S - Global Critical Race Theory and History: Brazil and the USA

Course Description
Critical Race Theory emerged in US law schools in the 1980s and has inspired young scholars and activists with its focus on the systemic nature of racism entrenched within the U.S. judicial system. Yet CRT has also been relentlessly modern and focused on the U.S.A. Given varying dynamics of racial subalternization and divergent legal systems, how is one to grasp the distinctive features as well as shared similarities between systems of racial domination in the USA and Brazil, two core regions of the New World African Diaspora? More broadly, how might one encompass 'race' and 'race-like' forms of domination in other societies in light of the sweep of history over the past millennia?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY565S GLOBAL CRITICAL RACE THEORY, ROMST565S GLOBAL CRITICAL RACE THEORY, CULANTH565S GLOBAL CRITICAL RACE THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

AAAS569 - Understanding Sickle Cell Disease: A Biopsychosocial Approach

Course Description
This course provides students with an overview of sickle cell disease, including its genetics, epidemiology, pathophysiology, medical complications, psychosocial challenges, and health service utilization from a global perspective. Students will engage in an exploration of the role of discrimination and stigmatization as they affect people with sickle cell disease, as well as differences in how the disease is viewed and managed in various countries.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NURSING569 SICKLE CELL DISEASE, GLHLTH569 SICKLE CELL DISEASE

AAAS570S - Philosophy in Motion: Corporeality, Gesture, and Movement in Modern Thought

Course Description
In an age where the circulation of knowledge across media is paramount, what role can be ascribed to the mobile body? This seminar will investigate the central role played by the body, movement, and gesture in modern French, Caribbean, and African philosophy. We will examine their relation to questions of aesthetics and politics, as well as theories of community and practices of resistance. We will explore the body as an epistemological interface producing, encoding, and transmitting knowledge. We will also work interdisciplinarily in the fields of cinema and performing arts, addressing each as forms of intelligibility in motion. Taught in English with an optional preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH570S PHILOSOPHY IN MOTION, CULANTH571S PHILOSOPHY IN MOTION, DANCE571S PHILOSOPHY IN MOTION, LIT570S PHILOSOPHY IN MOTION, ROMST570S PHILOSOPHY IN MOTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

AAAS571S - Introduction to Contemporary African Philosophy

Course Description
The objective of this course is to provide a critical overview of contemporary African thought as expressed in philosophical discourse, social sciences, literature and the humanities. The course will explore the questions raised by contemporary thinkers from the African continent and its diasporas, by raising the stakes of a philosophizing in and about Africa, starting from Africa and its diasporas. We will examine the extent to which these thoughts shed light on the political, cultural and civilizational problems of Africa and the contemporary world. Taught in French.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH571S CONTEMP. AFRICAN PHILOSOPHY, LIT573S CONTEMP. AFRICAN PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

AAAS581S - Sylvia Wynter and the Question of Caribbean Philosophy

Course Description
A course on Sylvia Wynter, alongside an archipelago of Caribbean oeuvres by Firmin, Césaire, Fanon, Glissant, etc. How to map Caribbean philosophy, when it has long been critical of modern philosophy as a discourse of critical exceptionalism; a mode of bourgeois rationalist production dividing labor between the intellectuals and the workers? Wynter makes use of a Latin American paradigm of autopoiesis and embodied cognition, proposing a 'ceremony able epistemologically to emancipate humankind's knowledge of the physical and purely biological levels of reality from our order-stabilizing / legitimating symbolic codes.' More readings by McKittrick, Henry, Bogues, Casimir, Chancy, Nesbitt, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST580S CARIBBEAN PHILOSOPHY, LIT581S CARIBBEAN PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AAAS589S - Black Visual Theory

Course Description
Approaches to studying and theorizing of African diasporal arts and black subjectivity, with a special emphasis on art historiography, iconology, and criticism, and a particular focus on slavery, emancipation, freedom, and cultural nationalism, as pertaining to peoples of African descent and as manifested in such visual forms as paintings, sculptures, graphics, and media arts from the early modern period to the present, as well as the political edicts, philosophical tracts, autobiographies, and theoretical writings of individuals similarly preoccupied with these ideas. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS555S BLACK VISUAL THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AAAS590S - Special Topics

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AAAS591 - Independent Study

Course Description
Students will work closely with the instructor on completing an independent study.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AAAS602S - Blackness, Social Death, and the Volatile Sacred

Course Description
In recent years, we have witnessed a renewed energy around theorizing blackness and its unsettling presence in the world. In addition to endeavors to think through the antagonistic relationship between blackness and the ideal human, authors have addressed topics such as black gender, the affinities and tensions between blackness and queerness, the ways in which blackness interrupts the logic of property, and the particular qualities of anti-black violence. In this course, we will pursue an aspect of contemporary black thought that has been central but undeveloped -- how blackness reimagines the religious and the sacred. Authors: Spillers, Wynter, Hartman, Sharpe, Moten, Glissant, Gumbs.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION605S BLACKNESS,SOCIAL DEATH,SACRED, ENGLISH680S BLACKNESS,SOCIAL DEATH,SACRED, GSF602S BLACKNESS,SOCIAL DEATH,SACRED

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AAAS610S - Africa, Cuba, Brazil: Great Powers of the Black Atlantic

Course Description
Explores shared cultural history of three great populations separated by oceans but linked by slave trade. Course will offer lively, mutually transformative dialogue in religion, music, and political ideas. This case study in the Africanization of the Americas and the Americanization of Africa challenges a range of conventional assumptions about transnationalism, race, class, gender, and their artistic expression.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH610S AFRICA, CUBA, BRAZIL, HISTORY610S AFRICA, CUBA, BRAZIL, ROMST522S AFRICA, CUBA, BRAZIL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

AAAS611S - Climate Change, Decolonization, and Global Blackness

Course Description
Decolonization and the Climate Crisis seeks to explore the linkages among three pivotal and simultaneously occurring catastrophes—criminality, displacement, pandemics—toward developing a set of principles regarding decolonization as an ethical approach to climate change. The class in operation with an FHI lab will view climate justice from the point of view of historical faultlines, exploring the the socioeconomic and political machinery that produce these projects of disaster in the first place.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

AAAS622S - Black Sonic Culture—Analog to Digital

Course Description
The course will examine the production, reproduction and distribution Black (African Diasporic) 'Sound'--inclusive of, but not exclusive of various musical cultures--in the creation of Black Sonic Culture(s) that were in conversation with and counter to Black Literary Culture, Black Visual Culture and Black Performance traditions. The course, in particular, will examine the impact on the transition from analog sound to digital sound.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH691S BLACK SONIC, LIT691S BLACK SONIC, MUSIC691S BLACK SONIC

General Education Curriculum Codes
IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

AAAS640S - African Cities

Course Description
If the predominant mode of development in African cities is informal and unplanned giving rise to new modes of life, livelihood, and leisure beyond the organizing infrastructures of formal architecture and design in reality, the new African urbanism seems to give rise to two distinct conditions of life--the one crisis and the other ingenuity. This course is concerned to think through the paradox of rapid urban growth across the continent--from Lagos and Cairo to Johannesburg and Cape Town--and the fact that such rapid urban growth is taking place without the conventional facilities, infrastructures and technologies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH562S AFRICAN CITIES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

AAAS642 - Global Inequality Research

Course Description
Engagement of vertically integrated research teams in projects exploring racial and ethnic disparities exhibited and expressed in six arenas: employment, wealth, health, political participation, education, and arts and culture. Each team will produce a major paper that will qualify for submission to a refereed journal in the area relevant to the focus of the study.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON541 GLOBAL INEQUALITY RESEARCH, SOCIOL642 GLOBAL INEQUALITY RESEARCH, POLSCI642 GLOBAL INEQUALITY RESEARCH, PUBPOL645 GLOBAL INEQUALITY RESEARCH, RIGHTS642 GLOBAL INEQUALITY RESEARCH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SS - (SS) Social Sciences

AAAS643S - Black Women, Black Freedom

Course Description
Examination of struggles for freedom, from nineteenth century through twenty-first, particularly through the lives of black women. Drawing on women's history, literature, art, performance and critical theory, students interrogate meaning of various freedoms, including civic and sexual. Objective is to discern a working definition for 'black freedom' by centering women in struggles for black liberation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST643S BLACK WOMEN, BLACK FREEDOM

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AAAS646 - Surviving Globalization: The Global South and the Development Imagination

Course Description
Global Change entails a multiplicity of environmental, social, economic, political and cultural factors that create challenges for development. The Global South, a vital area of the world, has been entangled in this vortex of global change as both catalyst and conductor of an emergent globalizing modernity. The progress of globalization seems beset by multiple stressors, ranging from financial crises and global recession, to climate change, state and non-state conflicts, free ranging terrorist aggression, and global health scares. What are the odds then of surviving globalization? What role do our imaginations of development play in either creating crises or effectively responding to them? This course is the same as African & African American Studies 409 but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ICS647 SURVIVING GLOBALIZATION, SOCIOL647 SURVIVING GLOBALIZATION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

AAAS651S - Black Queer Studies

Course Description

This course offers an introductory survey of Black Queer Studies. Beginning with a brief survey of foundational texts, we will discuss the range of emergent within the interdisciplinary body of work referred to as Black Queer Studies. We then explore a range of black queer pop cultural formations including film, ballroom culture, drag, poetry, fiction, and music. And finally discuss the theoretical and practical implications of applying queer theory to understand the lives and experiences of black lesbian, gay, bisexual, and transgender individuals as well as black heterosexuals, frequently marked as being outside of normative frameworks of sexuality, and thus queer.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
GSF651S BLACK QUEER STUDIES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

AAAS655S - Black Feminist Art & Digitality

Course Description

This course explores tropes, muses and icons of Black femininity in contemporary art. Graduate students enrolled in this seminar will consider diverse media, including photography, collage, craft and assemblage, as well as representations of the Black female body, of beauty and sexuality. In addition to reading canonic works in Black feminist theory, students will explore major works and exhibitions to consider the efforts of Black women art-makers from the 1960s through the 21st century.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS655S BLACK FEMINIST ART

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

AAAS660 - Health in the African Diaspora

Course Description

Exposes and explores the individual and joint contributions of biological and non-biological factors to health and wellbeing in peoples from various regions and countries of the African Diaspora. The course draws on a variety of disciplines, modes of inquiry, and health problems in comparative analyses of genetic, historical, political, and sociocultural dimensions of the African Diaspora. Course content is not limited to the transatlantic African Diaspora; it spans multiple African Diaspora streams.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH660 HEALTH IN THE AFRICAN DIASPORA, GLHLTH672 HEALTH IN THE AFRICAN DIASPORA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

AAAS690 - Special Topics

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

AAAS690S - Special Topics

Course Description
Seminar version of African & African American Studies 690.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SCISOC590S-1 SPECIAL TOPICS

AAAS699S - Gateway/Proseminar

Course Description
The proseminar is the required gateway course in the AAAS Certificate Program. It is designed to introduce students to the broad interdisciplinary scope of advanced scholarship in black diasporic studies globally. Students will learn interdisciplinary and cross disciplinary research methods, including awareness of archival, bibliographic, and qualitative/quantitative methods. The history of the field and its unique influence on the production of humanistic and social scientific knowledge are also significant concerns in the course.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

AAAS720S - Outsiders and Insiders

Course Description
An exploration of the phenomenon in Europe and the Americas during the nineteenth and twentieth centuries, when critics began to differentiate between art from learned, civilized communities and art from an uneducated, barbaric population. From the Beaux-Arts and Volkerkunde to the debates surrounding primitivism, modernism, and popular culture. An examination of the idea of an art hierarchy and other concepts of artistic outsiders and insiders from a variety of positions, taking into account nationality, class, literacy, economics, race, and gender in the categorization and evaluation of art.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST715S OUTSIDERS AND INSIDERS

AAAS736S - The Art & Politics of Cotton

Course Description
Cotton played a critical role in the development of both modern economies and modern cultures. This course focuses on cotton's role in the capitalist United States from the Civil War period to now and the socialist USSR from its inception in 1917 to its demise in 1991. We will look at visual objects that reflect the history of cotton in both economies and will emphasize the influence of the cotton trade on modern African American and Soviet art in Central Asia. We will explore slavery, race, and racism in both capitalist and socialist culture within the context of cotton. The course includes visits to relevant sites and offers an introduction to the visual history of the cotton trade.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST736S THE ART AND POLITICS OF COTTON, SES735S THE ART AND POLITICS OF COTTON

AAAS740S - Racial and Ethnic Minorities in American Politics

Course Description
Graduate-level course on politics of the United States' four principal racial minority groups Blacks, Latinos, American Indians, and Asian Americans. Importance of race and ethnicity in American politics is also explored.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI703S RACIAL/ETH MINORITIES AMER POL, PUBPOL845S RACIAL/ETH MINORITIES AMER POL

AAAS741S - Globalization

Course Description
'Globalization' is variously described in terms of the integration of markets, the increasing velocity of transactions, the opening up of new geographies for capital accumulation, de-regulation, and so on. This course looks to the Atlantic world as a starting point in understanding the rise of modern capitalism by way of the slave trade, the rise of finance capital, and the circulation of objects, ideas and people. This course goes on to questions relations of debt and dispossession; novel forms of governance and governmentality; flexibility and superfluity; and growing inequalities and constraints of late capitalism.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH741S GLOBALIZATION

AAAS765S - Existentialism, Nihilism, and Religion

Course Description
This course engages the relationship between nihilism, which claims that there are no secure foundations that provide life with meaning and purpose, and existentialism, a philosophy that prioritizes the freedom and responsibility of the individual subject against essential truths that precede existence and human striving. We will interrogate what it means to live in the afterlife of what Nietzsche calls the 'death of God' and question whether this spells the end of religion, spirituality, and the need for practices of the sacred. We also interrogate how race and gender pertain to questions about existence, being, nothingness, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION765S EXISTENTIALISM, NIHILISM, RELI, GSF765S EXISTENTIALISM, NIHILISM, RELI, ENGLISH765S EXISTENTIALISM, NIHILISM, RELI

AAAS767S - How Blackness Thinks

Course Description
This course examines current directions in conceptualizing black social life and performance. Examples are 'black feminist theory and practice,' 'queer of color discourse,' and more recently 'Afro-pessimism' and 'Black Optimism.' The guiding premise of the course is that when understood as exceeding racial category, blackness emerges as out(sider)ness, as differentiated social practice internal to which is a mode of thinking, a practice of study, perhaps even a certain performance of the sacred that is at once connected with the religious and the secular but that cannot be equated with either. In considering this outness of black thinking, authors we may read include: Fanon, Wynter, Spillers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION767S HOW BLACKNESS THINKS, ENGLISH767S HOW BLACKNESS THINKS

AAAS780S - Teaching Race, Teaching Gender

Course Description
Interdisciplinary analyses of the problematics of teaching about social hierarchies, especially those of race, class, and gender. Curricular content and its interaction with the social constructions of students and teachers.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF780S TEACHING RACE, TEACHING GENDER, HISTORY780S TEACHING RACE, TEACHING GENDER, LIT780S TEACHING RACE, TEACHING GENDER

AAAS791 - Independent Study

Course Description
Individual study in a field of special interest, under supervision of a faculty member, resulting in a substantive paper or written report containing significant analysis and interpretation of a previously approved topic.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AAAS890 - Special Topics

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

AAAS890S - Special Topics

Course Description
Topics will vary from semester to semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

AAAS891 - Special Readings

Course Description
Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

AAAS892 - Independent Study

Course Description
Individual research and reading in a field of special interest, under the supervision of a faculty member, resulting in a substantive paper or written report containing significant analysis and interpretation of a previously approved topic. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

AAAS900S - African American Religion Through the Literary Imagination

Course Description
In this course, we will examine and trouble the notion of African American religion by reading different genres of literature. By engaging slave narratives, autobiography, fiction, and the critical essay, the aim of the course will be to re-imagine categories that are associated with black religion: piety, spiritual, opacity, trauma, liberation, transgression, anguish, intersectionality, and the 'afterlife of slavery.' Two general ideas will motivate the direction(s) of the course. For one, black religiosity is not reducible to institutional forms like the church. Secondly, any endeavor to study black piety, or blackness more generally, requires multiple genres and approaches.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION900S AFRICAN AMERICAN RELIGION/LIT, ENGLISH900S AFRICAN AMERICAN RELIGION/LIT

AAAS590S-5 - Topics in African Art

Course Description
Specific problems of iconography, style, connoisseurship, or a particular art tradition in African art. Subject varies from year to year. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST590S-5 TOPICS AFRICAN ART

AADS510S - New Directions in Asian American Studies

Course Description
Reading-intensive seminar in the recent scholarship and cultural production that is pushing Asian American Studies in new directions, challenging preconceptions about the dominant narratives, geographic scope, and political assumptions in Asian American Studies. Possible topics include: imperialism, ecology, settler colonialism, disability studies, transnationalism, critical refugee studies, and feminist and queer politics. A significant portion of the course is devoted to students developing their own research projects.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY510S NEW DIR IN ASIAN AM STUDIES, AMES550S NEW DIR IN ASIAN AM STUDIES, GSF510S NEW DIR IN ASIAN AM STUDIES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations

AADS609S - Transpacific and Global Asia/America: Connecting Divided Histories and Knowledges

Course Description
This theory and methodology course introduces texts in Asian American studies and global and critical Asian Studies through the oceanic and archipelagic lens of the transpacific. Explores historical and disciplinary fault lines among Asian Studies, Asian/American Studies through higher ed, as well as entangled and divided histories of Asia and the Americas. Navigates legacies of colonial, cold war, and postcolonial histories between Asia and the Americas. Centers power dynamics of knowledge formation, translation, circulation across divides in history, journalism, academia, literature, films, digital and art works, gaming, community engagement, museums and archives, and law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES609S TRANSPACIFIC ASIA/AMERICA, CULANTH609S TRANSPACIFIC ASIA/AMERICA, CINE609S TRANSPACIFIC ASIA/AMERICA, GSF609S TRANSPACIFIC ASIA/AMERICA, ARTHIST609S TRANSPACIFIC ASIA/AMERICA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

AADS690S - Special Topics Seminar in Asian American and Diaspora Studies

Course Description
Topics vary each semester

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AADS890S - AADS Special Topics

Course Description
Special topics in Asian American & Diaspora Studies. Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

AMES503S - Asian & Middle Eastern Studies

Course Description
Graduate credit for undergraduate course in AMES. Consent of the instructor and the AMES DGS required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AMES511 - Documentary and East Asian Cultures

Course Description
Focus on documentary films from various regions in East Asia, including China, Taiwan, Korea and Japan, studying the specific historical and social context of each while attending to their interconnected histories and cultures. Emphasis on the ethical implications of documentary in terms of its deployment of visual-audio apparatus to represent different groups of people and beliefs, values and conflicts, both intra- and inter-regionally in East Asia. Special attention paid to the aesthetics and politics of the documentary form in terms of both its production of meanings and contexts of reception.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST511 DOCUMENTARY/EAST ASIAN CULTURE, ICS513 DOCUMENTARY/EAST ASIAN CULTURE, CINE511 DOCUMENTARY/EAST ASIAN CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AMES512S - Travel Japan

Course Description
Examines the 2,000-year history of travel to, from, and within Japan. After an overview of the theory and methodologies of travel history, we take a chronological journey from the earliest surviving records of travel to Japan, through the travel literature of Japan's classical era, to travel accounts of European visitors in the 16th and 17th century, the burgeoning culture of travel in the Edo era, and the age of mass tourism in the land of the bullet train. Readings in secondary and primary sources include poetry and fiction, travel guides, diaries, maps, images, and material objects such as souvenirs and regional foods. Students will do a research project on a project of their choice.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY512S TRAVEL JAPAN, EAS512S TRAVEL JAPAN, ARTHIST512S TRAVEL JAPAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

AMES518S - Approaches and Practices in Second Language Pedagogy

Course Description
Introduction to the history and current trends in language teaching with the goal of acquiring the knowledge and skills for informed, effective and reflective language instruction. Focus on psycholinguistic and sociolinguistic dimensions of second language acquisition, key concepts of second language teaching and their applications, and integration of culture and literature in language instruction. Compares features of the target and source languages. Assignments include review of teaching materials, creating lesson plans and modules, and writing an essay stating teaching philosophies. Open only to students who have a background in Asian languages.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST518S SECOND LANGUAGE PEDAGOGY, EDUC518S SECOND LANGUAGE PEDAGOGY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry

AMES523 - China Science and Technology Policy and Innovation

Course Description
China's technological rise has become one of the most important developments in the 21st century. This course will focus on an analysis of China's science and technology policy and innovation strategy, with emphasis on the 1978-Present period. The course will examine the transition in technological development from a Soviet -style top-down model to one where market forces play a greater role in driving advances in science and technology. We also will analyze China's increasing emphasis on an innovation driven economic model. Prereqs: basic knowledge of Chinese history, politics, economics and/or culture. Some basic knowledge of macroeconomics. Some knowledge of politics in the US and abroad.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EAS508 CHINA S&T POLICY & INNOVATION, SCISOC508 CHINA S&T POLICY & INNOVATION, POLSCI523 CHINA S&T POLICY & INNOVATION, PUBPOL512 CHINA S&T POLICY & INNOVATION

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (STS) Sci, Tech, and Society, (SS) Social Sciences

AMES531S - Culture and Environment in Modern Chinese History

Course Description
Examination of the changing patterns through which the physical environment and culture are mutually formed in late imperial and modern China. Culture includes creation of cosmological and social ideas as well as long term practices of settlement and utilization of the environment. In what ways did cultures represent limits to environmental exploitation? Special attention to how communities and the state respond to environmental disasters and explore the feedback loops for protection and prevention. Explores the importance of long-term understanding for the current environmental crisis in China.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY514S CULTURE/ENV IN MODERN CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (CZ) Civilizations, (SS) Social Sciences

AMES539S - Queer China

Course Description
Examines queer discourses, cultures, and social formations in China, Greater China, and the global Chinese diaspora from the late imperial period to the present. Course will focus on cultural representations, particularly literary and cinematic, but will also consider a wide array of historical, anthropological, sociological, and theoretical materials. Not open to students who have taken Asian and Middle Eastern Studies 439.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH539S QUEER CHINA, GSF502S QUEER CHINA, LIT539S QUEER CHINA, VMS539S QUEER CHINA, RIGHTS539S QUEER CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

AMES540S - Reading Heidegger

Course Description
Closely reading major works by Heidegger Tracing the Turn in Heidegger's thought from the early metaphysical writing to the lecture courses of the 1930s. Underscores the role played by language in Heidegger's thought Probes what aesthetics means within the context of Heidegger's work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT543S READING HEIDEGGER, RELIGION560S READING HEIDEGGER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AMES541S - Jews and the End of Theory

Course Description
Examines role played by the figure of 'the Jew' (or 'Jews') in critical theory. Assesses role played by Jewish 'giants' in shaping critical theory. Explores role played by images of Jews and Jewishness in linguistic turn of 20th century theory. Asks how should one understand contemporary theory in relation to 'Jews'—literal Jews and figurative Jews, whether demise of these intellectual giants and diminishing interest in 'Jews' and 'Jewishness' means 'the end of theory', and how to conceive the relations between theory and 'Jewish Studies' in light of these questions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
JEWISHST541S JEWS AND THE END OF THEORY, LIT580S JEWS AND THE END OF THEORY, ICS541S JEWS AND THE END OF THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

AMES549S - Techno-Orientalism: Asian/America, (Post)Human and SF

Course Description
Course examines global Science Fiction genres in literature, film, and social media to understand broad historical and social formations of Otherness, the Alien, Citizenship, (Im)migration. Studies racial assumptions in popular culture, domestic and international law, discourse of the human and human rights, science and technology industries, and other disciplines. Explores intersections of race, gender, sexuality, class, and geopolitical divisions and interactions in Asian/American Studies and Postcolonial Studies from the past to the present.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS549S TECHNO-ORIENTALISM

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

AMES550S - New Directions in Asian American Studies

Course Description
Reading-intensive seminar in the recent scholarship and cultural production that is pushing Asian American Studies in new directions, challenging preconceptions about the dominant narratives, geographic scope, and political assumptions in Asian American Studies. Possible topics include: imperialism, ecology, settler colonialism, disability studies, transnationalism, critical refugee studies, and feminist and queer politics. A significant portion of the course is devoted to students developing their own research projects.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY510S NEW DIR IN ASIAN AM STUDIES, AADS510S NEW DIR IN ASIAN AM STUDIES, GSF510S NEW DIR IN ASIAN AM STUDIES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations

AMES551S - Translation: Theory/Praxis

Course Description
Examines theories and practices of translation from various periods and traditions (Cicero, Zhi Qian, classical and scriptural translators, Dryden, Schopenhauer, Benjamin, Jakobson, Tanizaki, Qian Zhongshu, Derrida, Apter, among others) and considers topics such as incommensurability, cultural exchange, imperialism, 'Global Englishes,' bilingualism, and techno-language. Prerequisite: open to undergraduates, but all participants must have strong command of one language aside from English, as final project involves original translation and commentary. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT551S TRANSLATION: THEORY/PRAXIS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance

AMES560S - Reading the Chinese Novel

Course Description
A close reading of contemporary Chinese-language novels in the original. Texts will include prominent works from China, Taiwan, Hong Kong, and the Chinese diaspora. Recommended prerequisite: high-level reading knowledge of Chinese.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

AMES566S - Imaging a Nation: Japanese Visual Culture 1868-1945

Course Description
Focusing on various visual representations of Japanese national identity at home and abroad during the empire; contending interpretations of 'Japaneseness' and changing discourses on Japanese aesthetics in relation to broader historical developments; examining cultural production, exhibition practices, patronage, nationalism, neo-traditionalism, Pan-Asianism, and the role of visual culture under imperialism.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS523S IMAGING A NATION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AMES570S - The Evil Eye in Material Culture from Late Antiquity to Islam

Course Description
The phenomenon often referred to as the 'evil eye,' is an enduring belief that harm can be exerted through the gaze, causing illness, misfortune, and even sudden death. This seminar explores the material culture of the evil eye in the eastern Mediterranean and Near East from pre-Islamic late antiquity (200-600 CE), to medieval Islam (1200-1400). Students will engage in cross-cultural analysis, examining a range of artifacts and images across media, and consider recurring themes in their research, like the relationship between artifacts and the body, debates surrounding licit and illicit magical practices, and intersections between material and textual evidence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST570S THE EVIL EYE, RELIGION532S THE EVIL EYE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

AMES576S - Archiving and Visualizing Asia: Politics of Poetics of Knowledge Production

Course Description
Engages students in the practices, politics, and theories of conducting original archival research and knowledge productions. Hands-on research in the archives of Duke's Rubenstein Special Collections and elsewhere. Examines histories and theories of movements and encounters between the 'West' and 'Asia.' Teaches research methods through guided excavations in both digital and material resources. Directed readings of histories and theories and special guest lectures guide students on how to think critically on the theories and praxis of knowledge production, collection, circulation, and consumption. Students curate digital humanities projects based on original research.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum

AMES577S - Edward Said: Theory, Politics, Culture

Course Description
This seminar will explore Edward Said's oeuvre in depth. Said's work consciously bypassed the borders of disciplinarily and the strictures of genres. We will focus on re-tracing the evolution of his thought through a close interpretation of the relationship between theoretical elaboration, political intervention and cultural production in his own work. In doing so, we will focus on the theoretical and historical genealogies of his seminal work Orientalism, his multiple writings on Palestine, and his views on the intellectual's vocation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT577S EDWARD SAID, ROMST577S EDWARD SAID

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

AMES580S - History of Buddhist and Christian Interactions

Course Description
The study of the global encounter between Buddhists and Christians from the sixteenth century to the present. Topics to be covered include missionary encounters, conversion, polemical literature, inter-religious dialogue, and religious exchange, as well as the portrayal of these interactions in literature and the arts. At least one previous course in Buddhism or Asian religions and a course in religious studies is recommended.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION580S BUDDHISM AND CHRISTIANITY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

AMES581S - Pan-Asianism, Religion, and the State in Modern Asia

Course Description
An examination of the interaction between religious institutions and the state in modern Asia. The role of religion in the formation of pan-Asian identity in Asia also will be investigated.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION581S RELIGION IN MODERN ASIA, EAS581S RELIGION IN MODERN ASIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations

AMES590 - Special Topics in Asian and Middle Eastern Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AMES590S - Special Topics in Asian & Middle Eastern Studies

Course Description
Topics vary by.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AMES593 - Research Independent Study

Course Description
Individual research in a field of special interest under the supervision of a faculty member, the central goal of which is a substantive paper or written report containing significant analysis and interpretation of a previously approved topic. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

AMES599S - Meiji Japan

Course Description
The class offers an in-depth study of the Meiji Era (1868-1912). Readings include major research publications on selected topics, which may include the Meiji Restoration, political reforms, popular protests, women's experiences, religious trends, intellectual developments, literary and visual cultures, economic development, the Sino- and Russo-Japanese wars, and more. Students have the option to undertake independent research projects.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY599S MEIJI JAPAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

AMES605 - East Asian Cultural Studies

Course Description
East Asia as a historical and geographical category of knowledge emerging within the various processes of global movements (imperialism, colonialism, economic regionalism).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH605 EAST ASIAN CULTURAL ST, LIT571 EAST ASIAN CULTURAL ST, ICS605 EAST ASIAN CULTURAL ST

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

AMES609S - Transpacific and Global Asia/America: Connecting Divided Histories and Knowledges

Course Description
This theory and methodology course introduces texts in Asian American studies and global and critical Asian Studies through the oceanic and archipelagic lens of the transpacific. Explores historical and disciplinary fault lines among Asian Studies, Asian/American Studies through higher ed, as well as entangled and divided histories of Asia and the Americas. Navigates legacies of colonial, cold war, and postcolonial histories between Asia and the Americas. Centers power dynamics of knowledge formation, translation, circulation across divides in history, journalism, academia, literature, films, digital and art works, gaming, community engagement, museums and archives, and law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AADS609S TRANSPACIFIC ASIA/AMERICA, CULANTH609S TRANSPACIFIC ASIA/AMERICA, CINE609S TRANSPACIFIC ASIA/AMERICA, GSF609S TRANSPACIFIC ASIA/AMERICA, ARTHIST609S TRANSPACIFIC ASIA/AMERICA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

AMES610S - Trauma and Space in Asia

Course Description
Space and Trauma across Asia. Introduces theoretical framework of 'trauma discourse;' examines how the experience of space in Asia broadly defined has shaped historical traumas, which have marked the transition from colonialism to postcolonialism. Focus on Israel/Palestine, India/Pakistan, China/Taiwan, Japan/Korea; examines how critical terms originating in one historico-geographical context are translated across geographical boundaries. Taught simultaneously with AMES 410, but includes additional readings, assignments, and meeting times.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

AMES616S - China As World Picture

Course Description
How does Heidegger's concept 'world picture' become relevant for the epistemological space occupied by a non-Western culture in modern times? This course explores this challenging question by foregrounding the story of modern and contemporary China, in particular China's status as an emblem of the gigantic (in scale, scope, and numbers) on the global scene. Texts to be discussed will include internationally acclaimed films (by Bertolucci, Antonioni, Chen Kaige, Zhang Yimou, Wong Kar-wai, Li Yang, Jia Zhangke, Ann Hui, and others), documentary excerpts, theoretical analyses, historical accounts, and journalistic reports, among other sources.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT617S CHINA AS WORLD PICTURE, VMS616S CHINA AS WORLD PICTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

AMES620S - Critical Genealogies of the Middle East: An examination of the canon of Middle East scholarship

Course Description
This course provides an in-depth investigation into the various theoretical and textual traditions that inform interdisciplinary Middle East studies with a focus on History, Cultural Studies, Religion and Social Sciences. Interdisciplinary in scope, the course will maintain a disciplinary rigor so that students learn how knowledge is produced within the framework of specific disciplines. Foci include social history, literary theory, critical visual studies, and postcolonial theory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH526S GENEALOGIES OF THE MIDDLE EAST

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations, (SS) Social Sciences

AMES627S - Comparative Media Studies

Course Description
Explores the impact of media forms on content, style, form, dissemination, & reception of literary & theoretical texts. Assumes media forms are materially instantiated & investigates their specificities as important factors in their cultural work. Puts different media forms into dialogue, including print, digital, sonic, kinematic & visual texts, & analyzes them within a theoretically informed comparative context. Focuses on twentieth & twenty-first century theories, literatures, & texts, esp. those participating in media upheavals subject to rapid transformations. Purview incl. transmedia narratives, where different versions of connected narratives appear in multiple media forms.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT625S COMPARATIVE MEDIA STUDIES, ISS615S COMPARATIVE MEDIA STUDIES, VMS625S COMPARATIVE MEDIA STUDIES

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance

AMES631 - Questions of National Cinemas

Course Description
Films, documentaries, television series, and soap operas produced in mainland China in the post-Mao era. Topics include the history and aesthetics of the cinema, soap operas as the new forum for public debates on popular culture, the emerging film criticism in China, the relationship of politics and form in postrevolutionary aesthetics. (Same as AMES 431 but requires extra assignments.) Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE632 NATIONAL CINEMAS, LIT632 NATIONAL CINEMAS, VMS632 NATIONAL CINEMAS

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

AMES660S - Games, Play, and Selfhood: Immersive Media and Extended Realities

Course Description
Interdisciplinary study of history, theory, criticism, practice of immersive and interactive media, with emphasis on virtual worlds, games, and extended reality. Cross-cultural interpretative frameworks, intersectional theories, comparative approaches across East/West and Global South. Critical examination of the metaverse and playable, interactive environments as analog, historic, and contemporary phenomena. Online selfhood, avatar identities, and digital cultures. Ludology versus narratology, hyperreality, agency, aesthetics. Theories of space, place, memory, gamification, participatory media. Applications in museums, cultural heritage, art, journalism, theater, and popular media. Hands-on testing and digital authoring. Blogs, critical research paper, final projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS660S GAMES, PLAY, AND SELFHOOD, VMS660S GAMES, PLAY, AND SELFHOOD, CMAC660S GAMES, PLAY, AND SELFHOOD, GSF660S GAMES, PLAY, AND SELFHOOD

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

AMES671 - World of Korean Cinema

Course Description
Introduction to Korean Cinema from postwar to contemporary period. Examination of issues such as national division, gender, pop culture, family, transnational identity and its influence abroad. Same as Asian and Middle Eastern Studies 171, but requires extra assignments.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

AMES672 - Two Koreas: History, Society and Culture

Course Description
This course introduces the divided histories of North and South Korea and their contemporary legacies in regional and global contexts. The course will be organized around select topics and guest lectures. Some topics explored include colonization, modernization, division, war, migration, gender and sexuality, human rights, popular and political cultures, and globalization in comparative perspectives. This course will have additional readings, meeting times, and a substantially longer research paper requirement for graduate-level credit. The course will teach graduate students the foundational methods of conducting original research and writing a research paper by the end of the semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

AMES690S - Special Topics in Asian and Middle Eastern Studies

Course Description
Seminar version of Asian and Middle Eastern Studies 590. Topics vary each semester

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AMES695 - Collaborative Research Projects

Course Description
Small collaborative research projects of faculty with graduate and undergraduate students. Close mentoring of students. Training in methods of cultural analysis and interpretation. Projects developed in conjunction with ongoing faculty initiatives. Students will present their research in the form of a term paper or some equivalent medium. Funding available to support students' research. Director of Graduate Studies consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

AMES700 - East Asian Studies Core Course: Fields and Methods

Course Description
A graduate-level introduction to the study of East Asia. Students will survey a variety of disciplinary approaches to East Asian studies. The course will be directed by the director of graduate studies or the institute director. Units of the course will be taught by core faculty of the Asian/Pacific Studies Institute and visiting lecturers. Discipline approaches to be addressed include anthropology, art history, economics, history, literary studies, political science, religious studies, and sociology. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EAS700 EAST ASIAN STUDIES CORE COURSE, RELIGION700 EAST ASIAN STUDIES CORE COURSE, HISTORY707 EAST ASIAN STUDIES CORE COURSE

AMES709 - Chinese Im/migration: Chinese Migrant Labor and Immigration to the US

Course Description
Comparative examination of contemporary China's 'floating population' of migrant labor, and of Chinese immigration abroad (particularly to the US). Focus on cultural representation of these phenomena (particularly literary, cinematic, and artistic works), but sociological, anthropological, economic, and political perspectives will also be considered. Topics include cultural alienation, marginalization, and assimilation; education and health care; labor and commodification; gender and ethnicity; narratives of modernization and development; together with the ethical, social, and political implications of migration.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS709 CHINESE IM/MIGRATION

AMES720 - Professionalization Workshop in Middle East Studies

Course Description
This bi-weekly professionalization workshop held alternately at Duke and UNC prepares students for a career in Middle East Studies. It is tailored to the interests of enrolled students who may suggest readings for discussion and present their own work.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

AMES738 - Theories of Minority Discourse

Course Description
Course will introduce a variety of critical theories of minority discourse, or discourses associated with minority groups within a more dominant cultural tradition. Course will also consider examples of these sorts of texts, focusing primarily on works from within a Chinese or Greater Chinese cultural sphere. knowledge of Chinese encouraged, but not required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

AMES740S - Critical Genealogies

Course Description
This course serves as an in-depth investigation into the many different theoretical traditions that inform interdisciplinary feminist studies. Specific foci include Marxist-feminism, poststructuralism, feminist film theory, psychoanalysis, French feminism, postcolonial theory, deconstruction, the Frankfurt school, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF740S CRITICAL GENEALOGIES, CULANTH746S CRITICAL GENEALOGIES

AMES774S - Ideology and Religion in Muslim Central Eurasia

Course Description
While Islam as a lived religion offers a common starting point to understand the experiences of Muslims in Central Eurasia, ideologies such as Islamism, positivism, nationalism, and socialism have informed the various powers that attempted to regiment their lives according to various blueprints for a future society since the nineteenth century. Thus, the minds and bodies of Central Eurasia's Muslims have been the subject of intense intellectual debates and social engineering interventions, and in their experiences, this course explores the modern interplays of religion and ideology as they have been mediated by individual or group interests, power dynamics, and mundane realities.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SES774S IDEOLOGY AND ISLAM IN EURASIA, HISTORY774S IDEOLOGY AND ISLAM IN EURASIA, RELIGION774S IDEOLOGY AND ISLAM IN EURASIA

AMES790S - Special Topics in Critical Asian Humanities Methodologies

Course Description
Course offers in-depth introduction of theories and methodologies that may be used for the study of East Asian Humanities. Approaches may include cultural studies, marxism and psychoanalysis, gender and sexuality studies, nationalism and diaspora studies, empire and postcolonial studies. May be repeated for credit.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

AMES890 - Special Topics in Asian and Middle Eastern Studies

Course Description
Special topics course. Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AMES890S - Special Topics in Critical Asian Humanities

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

AMES919S - Transnational Confucianism

Course Description
This course examines the multiple transnational developments of Confucianism as religious, political, and cultural traditions from the eighteenth century to the twentieth-first century, both in Asia and beyond. Historically Confucianism has taken a strong hold in East Asia for centuries, leaving distinct legacies in China, Korea, and Japan. But it has also been having significant impact in Southeast Asia, especially in Vietnam, Singapore, Indonesia, and Malaysia. In the turn towards the twentieth-first century, we see new developments not only in countries where Confucianism has previously left strong impressions, but also in other parts of the world, such as the United States.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION919S TRANSNATIONAL CONFUCIANISM

ARABIC610S - Quranic Arabic: Tafsir and Tajwid

Course Description
This is a study of the features and structure of classical Arabic with an emphasis on the sciences of Tajwid/Tajweed and Tafsir. Students will learn the various styles, periods and schools in Tafsir and Tajwid. They will read excerpts from the classical schools of Tafsir, and the main characteristics of each. Memorizing and rehearsing selected verses for Tajwid are required in this course. Prerequisite: a minimum of two semesters of Arabic beyond the advanced level.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARABIC781 - Arabic For Graduate Students

Course Description
Completion of a regular Arabic class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Arabic as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARABIC782 - Arabic For Graduate Students

Course Description
Completion of a regular Arabic class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Arabic as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARABIC789 - Classical Arabic Language & Literature

Course Description
Explore the development of Arabic language and Literature from the pre-Islamic era to the current epoch. Review major Arabic works in each of the Islamic eras. Explore the role of the Qur'an in the construction of Arabic sciences. Examine a variety of classical texts within the context of each era. Review the content and forms of essential texts of the science of Islamic Studies, including tafsir (Qur'anic exegesis), sirah (biography of the Prophet Muhammad), Hadith, travel literature, biographical literature. The graduate and undergraduate sections will be taught together with extra expectations and additional assignments for the graduate students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARABIC791 - Independent Study

Course Description
Individual study of language for conducting research involving sources written or spoken in the language. Students have to submit a proposal describing the purported research, types of sources to be analyzed, and kinds of language knowledge or skills they need to be equipped with. Consent of instructor and director of undergraduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARTHIST502S - Greek Art: Hellenistic to Roman

Course Description
Seminar explores art of Greek East from 300 B.C.E to 300 C.E.; emphasis on understanding and analyzing production, style, materials, functions. Sculpture made for Hellenistic kings and cities, and changes in sculptural production with Roman conquest and imperial rule. Main categories of evidence: funerary monuments, portrait statues, heroic groups in baroque style, Dionysiac-themed decorative sculpture. Issues of stylistic categories, periodization, meaning and interpretation, theoretical perspectives expressed in ancient literary texts, and current scholarly debates and trends in study of Hellenistic and Roman art in a Greek context form an integral part of the seminar.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST542S GREEK ART: HELLENISTIC-ROMAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST503S - Ancient Spain and Portugal: The Roman Provinces of the Iberian Peninsula

Course Description
Examines how Roman provinces were created and incorporated into the Roman Empire. Investigates traces in ancient visual and material culture of bonds between provinces and Rome. Approaches complex issues of colonialism, change and continuity connected with Roman conquest of new territories in the Mediterranean. Examines monuments and new archaeological data available from Roman Spain and Portugal, selected samples from other Roman provinces.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST546S ANCIENT SPAIN AND PORTUGAL

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

ARTHIST504SL - Building Duke: An Architectural History of Duke Campus from 1924 to Today

Course Description
Research seminar and laboratory on the architectural history of Duke Campus based on original archival materials (photos, blueprints, contracts, letters, and financial records) preserved in Duke Library collections. Explores the variety of interpretative lenses in the field of architecture history, including, but not limited to, issues of style, patronage, labor, class, gender, and race. Analyzes notions of cultural identity as construed by Duke founders and administrators, and as imprinted on Duke Campus by its architects and landscape designers. Original research projects based on primary materials and digital visualizations of changes in the physical fabric of Duke Campus through time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HCVIS504SL BUILDING DUKE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

ARTHIST505S - Visual Studies from the Global South

Course Description
This seminar shifts the geography of critical theory, introducing interdisciplinary approaches to visual culture and art formulated outside the northern academies of Europe and the United States. Diverse readings introduce how the visual is constituted in sites that have endured colonialism and globalization. Specific topics include: word and image; space, place, and site; media and new technologies; indigenous and Afro-diasporic philosophies; and the raced and gendered body.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS505S VISUAL STUDIES GLOBAL SOUTH, ROMST505S VISUAL STUDIES GLOBAL SOUTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST506S - Renaissance Art: A Critical Assessment

Course Description
Mona Lisa. Teenage Mutant Ninja Turtles. Beyoncé. Renaissance art is popular in contemporary culture, and it has inspired artists and their publics around the globe since at least the 1960s. However, in academic circles, scholarship about Renaissance art is often seen as old fashioned and indifferent to contemporary debates centered on social and racial justice, gender and sexuality, or the environment. This seminar counters this view by bringing students together to discuss the most recent scholarship on Renaissance art that engages with global geographies, race, class, gender, disability, ecology, and the neurosciences. A basic knowledge of Renaissance art is welcome but not necessary.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN506S RENAISSANCE ART

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST508S - Art and Markets

Course Description
Cross-disciplinary art history-visual culture-economics seminar. Analytical and applied historical exploration of cultural production and local art markets, and their emergence throughout Europe, Asia, and the Americas. Criteria for valuation of imagery or what makes art as a commodity desirable or fashionable. Visual taste formation, consumer behavior, and the role of art dealers as cross-cultural negotiants. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS567S ART AND MARKETS, ECON551S ART AND MARKETS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

ARTHIST509S - Mimesis in Theory, Embodied Practice, and Literary Arts

Course Description
Theoretical exploration of mimesis from Plato and Aristotle to Tarde, Lacan, Girard, Rancière, Lacoue-Labarthe, Butler, Malabou, Cassin, and Latoo. Additional emphasis on mimesis in human and animal development and social/behavioral practice, with interdisciplinary intertexts from fields ranging from neuroscience to genomics. Frequent departures from paradigmatic and empirical evidence to revel in the sensory and intuitive renewal of literary/artistic mimetic agency and apperception. Course taught in French, with occasional sources in English. Flexible language of assignments and English discussion section for graduate students outside of the French field.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH507S MIMESIS IN THEORY AND PRACTICE, ENGLISH581S MIMESIS IN THEORY AND PRACTICE, LIT507S MIMESIS IN THEORY AND PRACTICE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST512S - Travel Japan

Course Description
Examines the 2,000-year history of travel to, from, and within Japan. After an overview of the theory and methodologies of travel history, we take a chronological journey from the earliest surviving records of travel to Japan, through the travel literature of Japan's classical era, to travel accounts of European visitors in the 16th and 17th century, the burgeoning culture of travel in the Edo era, and the age of mass tourism in the land of the bullet train. Readings in secondary and primary sources include poetry and fiction, travel guides, diaries, maps, images, and material objects such as souvenirs and regional foods. Students will do a research project on a project of their choice.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY512S TRAVEL JAPAN, AMES512S TRAVEL JAPAN, EAS512S TRAVEL JAPAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ARTHIST516S - Fascism East and West: The Visual Culture of Japan, Germany, and Italy

Course Description
Through a close analysis of cultural production and aesthetics, this course examines the relationship between the politics of fascism and its symbolic practices; how forms of rituals, myths, and images played a crucial role in the formation of the fascist regime's self-identity, and the formation of the national fascist subject. Materials include painting, sculpture, architecture, photography, graphic design, mass media, film, and forms of public spectacle and pageantry.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST520S - Roman Provincial Archaeology: The West

Course Description
Investigates ancient visual and material culture for information about relations between Rome's western provinces (especially Spain) and Rome, from initial, brutal conquest through incorporation. Within an archaeological context we address complex issues, such as colonialism and indigenous change and continuity, as evidence in Rome's conquest of new territories in the Mediterranean. Examines monuments and new archaeological data available from Roman Spain, as well as selected samples from other Roman provinces of the western Mediterranean (Britain, Gaul, and others).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST547S ROMAN PROVINCIAL ARCHAEOLOGY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST532S - Premodern Times: A User's Manual

Course Description
How has thinking with premodern cultures shaped criticism? Seminar explores aspects of medieval Euro-Mediterranean cultures as perennial objects of thought, investigating the ways the surviving writing and images mark key theoretical models. Inquiry proceeds by pairs of works. We debate a mode of thinking by examining critical essays with premodern works. Writers include Christine de Pizan, Alain Chartier, troubadour poets; critics such as Agamben, Boucheron, Memmi, Schlanger. Modes such as gender & sexuality; visual culture; political thought; multilingual poetics and practice. Works in translation; readings in original language and preceptorial meetings for majors/graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH530S PREMODERN TIMES, MEDREN642S PREMODERN TIMES, LIT541S PREMODERN TIMES, ROMST531S PREMODERN TIMES, HISTORY508S PREMODERN TIMES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ARTHIST535S - Camera Asia

Course Description
Examines how the art and technology of photography have changed how we study and understand the historical past, with a focus on China, India, and Japan. Analyzes arrival of the camera as a historical event, along with photographers and studios. Evaluates ways in which the new technology was embraced, and considers how the camera reconfigured attitudes towards the body and gender relations, nation building, war, catastrophes and death.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS535S CAMERA ASIA, HISTORY530S CAMERA ASIA, ICS531S CAMERA ASIA, PHOTO535S CAMERA ASIA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST539 - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS545 BLACK CAMERA, AAAS539 BLACK CAMERA, CINE545 BLACK CAMERA

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

ARTHIST543S - Methodology of Art History

Course Description
Various theoretical perspectives that have shaped disciplinary perspectives and practices in art history. Introduction to particular types of methodologies (i.e. Marxism, feminism, race and gender, psychoanalysis, post-colonial theory, and deconstruction) as fields of inquiry through which the study of the visual arts and culture have been practiced. Historiography of the last two decades in art history; selected contemporary debates.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST545S - The Archaeology of Death: Ritual and Social Structure in the Ancient World

Course Description
Contextual study of material culture linked to funerary practices and traditions in the ancient Greek or Roman world. Topics may include funerary rituals, the ritualization of space around cities and in the countryside; ancestor cult and ancestor representation; monumental and not so monumental tombs, grave offerings and grave assemblages; public personas and funerary iconography: gender, age, occupation. Death in Greece/Rome and death in the provinces.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST543S THE ARCHAEOLOGY OF DEATH

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

ARTHIST546S - The American Artist

Course Description
This course utilizes art-historical methodologies as tools for critical inquiry and scholarly research on one American artist (selected as per this seminar's scheduling every four years). Apart from a firm biographical and art-historical grasp of the specific American artist under investigation, the goal of this course is to develop visual literacy of American art through seeing and writing. An emphasis will be placed on improving various forms of written art discourse (i.e., descriptive, expository, interpretative, etc.)

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST547L - Introduction to Digital Archaeology

Course Description
Course studies the radical changes that new methodologies and technologies have wrought in archaeology. Remote sensing technologies, digital tools, virtual reality systems for data recording, documentation, simulation and communication of archaeological data have profoundly changed archaeological field operations. Course surveys the state of the art in: techniques of digital recording and digital documentation; GIS and remote sensing; international case studies in digital archaeology; virtual reality and virtual simulation; Web and digital publications.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST544L DIGITAL ARCHAEOLOGY, ISS544L DIGITAL ARCHAEOLOGY

General Education Curriculum Codes
(R) Research, (STS) Sci, Tech, and Society, (CZ) Civilizations

ARTHIST549S - Roman Coinage: The Materiality of the Roman Economy

Course Description
New trends in Roman numismatics (from the late Republic to the early Empire, 3rd c. BCE-2nd c. CE). Archaeology from coins. Barter, money and coinage. The introduction of coinage in Rome and the provinces. Making money (coin production), using money (monetary, non-monetary and ritual uses), losing money (coin circulation, hoards, single finds): contextual interpretations. Monetary systems: coins from Rome and coins from the provinces. Coinage and identity. False coinage.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST540S ROMAN COINAGE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

ARTHIST551SL - Advanced Digital Art History: New Representational Technologies

Course Description
Development of research projects in art history, visual studies and material culture expressed by using new technologies to record and communicate complex sets of humanities data from various primary sources. Introduces techniques for the digital presentation and analysis of visual material through a series of interpretative technologies, including the development of web applications; data visualization and analysis; project documentation; and/or database modeling, construction & management. No prior experience with the above is expected. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS551SL ADVANCED DIGITAL ART HISTORY, ISS551SL ADVANCED DIGITAL ART HISTORY

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST553S - Principles of Roman Archaeology

Course Description
Survey of the material culture of the Roman world, from the creation of the first provinces in the Late Republic to the end of the principate under Diocletian (late 3rd c. BCE–late 3rd c. CE). The course analyzes the archaeology of Rome and the provinces from a thematic perspective. Subjects include imperialism and colonization, rural and city landscapes, housing and households, necropoleis, the ancient economy, social identities (such as gender and age) and social structure (slavery). The course addresses various theoretical models to understand, among other topics, the creation and the decline of the empire and incorporates, when possible, hands-on work with artifacts at the Nasher Museum.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST551S ROMAN ARCHAEOLOGY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

ARTHIST554S - Harlem Renaissance

Course Description
Variously called the 'New Negro Arts Movement,' 'Negro Renaissance,' or 'Harlem Renaissance,' the blossoming of African American arts and letters in the 1920s and 1930s stemmed from multiple sources, motives, and cultural circumstances. The predominantly African American, NYC neighborhood of Harlem became the symbolic capital of the 'New Negro.' But other cities, especially Chicago and Paris, France, were also sites for black creativity in these years. This seminar explores this branch of early 20th century modernism – emanating out of a flowing black cultural diaspora – in its various permutations and artistic forms, with a special emphasis on the visual arts.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS520S HARLEM RENAISSANCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST555S - Art and the Holocaust: Architecture, Art, and Cultural Politics during the Nazi Period

Course Description
This course will analyze the history of the genocide of the European Jews, and its connection to antisemitic art and cultural policy during the Nazi period. With a sound understanding of the development of oppressive policies against the Jews, and looking at a variety of media (painting, architecture, film, photography, design), the course will explore the complicated relationship between developing racist policies and the world war as they impacted and were in turn influenced by artists. Examines not only artists involved in the Nazi state, but also those who resisted in exile or were its victims.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN565S ART AND THE HOLOCAUST, JEWISHST555S ART AND THE HOLOCAUST, HISTORY531S ART AND THE HOLOCAUST, VMS525S ART AND THE HOLOCAUST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST556 - Greek Archaeology Survey, Part 1

Course Description
The first of a two-part intensive survey of the material culture of the Ancient Greek world in the early period, focusing on the Iron Age and Archaic periods (ca. 1000-480 BC). The course will examine the archaeological evidence for civic, rural, sacred, funerary and domestic activities and will consider the development of architectural, sculptural, and ceramic forms throughout the period in order to understand how material culture both reflects and shapes cultural identity. Various methodological approaches and theoretical models will be introduced, and the distinction of Greek culture from others in the Eastern Mediterranean will be interrogated.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST552 GREEK ARCHAEOLOGY I

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

ARTHIST557S - Trauma in Art, Literature, Film, and Visual Culture

Course Description
Theories of trauma applied to visual representations of violence, destruction, and pain in contemporary art, film, and literature, examining the topic through multiple subjects from the Holocaust, cults, gangs, racism, and sexual abuse to cultures of trauma. Theories of trauma examined from a variety of sources including clinical psychology, cultural and trauma studies, art, film, and literature, aiming to enable students to gain the visual acuity to identify, understand, and respond to traumatic images with empathy. Not open to students who have previously taken this course as Art History 295S.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS557S TRAUMA IN ART, LIT., FILM & VC

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST558S - Spatial Practices

Course Description
How space works from medieval refectories to Starbucks, from Jerusalem to Las Vegas, from mikvaot to hot spring spas. Consideration of space through theoretical texts, including Lefebvre, Habermas, Eliade, Zizek, and mapped on specific historical landscapes. Consent of instructor required: preference given to students earning concentration in architecture.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST561 - Etruscan Cities

Course Description
Focuses on concept and definition of city in Etruscan society and its socio-political role in territorial organization. Main topics include pre-urban and urban development of Etruscan society, the first settlements, space and rituals, formation and development of Etruscan City States, cities and landscapes, cultural models between Greeks and Etruscans, colonies and emporia, transformations and changes in Roman times. Primary evidence for all the above will be visualization of material remains from antiquity.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST560 ETRUSCAN CITIES

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

ARTHIST570S - The Evil Eye in Material Culture from Late Antiquity to Islam

Course Description
The phenomenon often referred to as the 'evil eye,' is an enduring belief that harm can be exerted through the gaze, causing illness, misfortune, and even sudden death. This seminar explores the material culture of the evil eye in the eastern Mediterranean and Near East from pre-Islamic late antiquity (200-600 CE), to medieval Islam (1200-1400). Students will engage in cross-cultural analysis, examining a range of artifacts and images across media, and consider recurring themes in their research, like the relationship between artifacts and the body, debates surrounding licit and illicit magical practices, and intersections between material and textual evidence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES570S THE EVIL EYE, RELIGION532S THE EVIL EYE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST575S - Queer Theories of Experience & Art

Course Description
This seminar applies phenomenology to writing and thinking about art. Beginning with primary debates concerning how things present themselves to perception (Husserl, Heidegger, Shapiro, Merleau-Ponty, Beauvoir, Sartre), the course then considers poetic extrapolations (Fanon, Focillon, Bachelard), culminating in contemporary accounts (Nesbit, Salamon, Wainwright, and Ahmed) that interrogate phenomenology's basic precepts while employing its methods to address art in relation to bodily experience, identity, sexual orientation, and social context. Short exercises and a final paper provide students with the opportunity to work through these ideas in light of their own interests and research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT575S QUEER EXPERIENCE & ART

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ARTHIST580S - Proseminar 1: Interdisciplinary Digital Humanities

Course Description
Multimodal interdisciplinary digital humanities in theory and practice. Research, cultural heritage applications, public outreach. Theoretical and critical perspectives on humanities texts, data, images and other media; archives and exhibitions; visualization; museums; digital mapping and timelines; immersive and interactive media systems; apps and installations. Project-based critique, hands-on exercises, project management, and reflective writing. Interaction with Smith Media Labs projects and collaborators. Attention to digital divides, access and equity issues, global media contexts, sustainability, evaluation best practices, and obsolescence/EOL considerations for digital projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS580S DIGITAL HUMANITIES PROSEM 1, ISS580S DIGITAL HUMANITIES PROSEM 1, CMAC580S DIGITAL HUMANITIES PROSEM 1

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARTHIST581S - Proseminar 2: Critical Approaches to Computational Media Practice

Course Description
Core studio practice-based course for advanced computational methods; emphasis on development of individual artistic and/or digital research practice through prototyping and critique. Introduction to key paradigms for computational practice that can inflect a variety of creative and scholarly avenues, from experimental documentary to digital art history to generative and algorithmic approaches to digital, physical and interactive media. Specific topics may vary.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS581S COMPUTATIONAL MEDIA PROSEM 2, ISS581S COMPUTATIONAL MEDIA PROSEM 2, CMAC581S COMPUTATIONAL MEDIA PROSEM 2

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARTHIST582S - Copies and Duplication

Course Description
Historical examination of duplication in the visual arts from antiquity to the present and how copies produce meaning. Students consider in depth the concepts and practices of duplication and originality in relation to their own interests and research focus. Subjects might include classical sculpture, modern forgeries, Chinese painting, photographic reproduction, prints and editions, film and the cinema, and seriality in modern art and architecture.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARTHIST588S - Sculpture Europe to China

Course Description
The course will study the making, collecting and display of sculpture from antiquity to the twentieth century. The participants will consider the idea of sculpture as a European category and the different ways sculpture was understood in the rest of the world, especially China and Asia.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS588S SCULPTURE EUROPE TO CHINA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST590S - Special Topics

Course Description
Subjects, areas, or themes that embrace a range of disciplines or art-historical areas.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ARTHIST590SL - Special Topics in Roman Archaeology

Course Description
Studies in Roman art and archaeology on focused themes, or on particular assemblages or problems. Offerings might include Art and Architecture of Pompeii, Roman Portraiture vel sim. Includes laboratory component.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST590SL SP TOP ROMAN ARCHAEOLOGY

ARTHIST609S - Transpacific and Global Asia/America: Connecting Divided Histories and Knowledges

Course Description
This theory and methodology course introduces texts in Asian American studies and global and critical Asian Studies through the oceanic and archipelagic lens of the transpacific. Explores historical and disciplinary fault lines among Asian Studies, Asian/American Studies through higher ed, as well as entangled and divided histories of Asia and the Americas. Navigates legacies of colonial, cold war, and postcolonial histories between Asia and the Americas. Centers power dynamics of knowledge formation, translation, circulation across divides in history, journalism, academia, literature, films, digital and art works, gaming, community engagement, museums and archives, and law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES609S TRANSPACIFIC ASIA/AMERICA, AADS609S TRANSPACIFIC ASIA/AMERICA, CULANTH609S TRANSPACIFIC ASIA/AMERICA, CINE609S TRANSPACIFIC ASIA/AMERICA, GSF609S TRANSPACIFIC ASIA/AMERICA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ARTHIST620S - Models: Premodern to Posthuman

Course Description
Architectural models may be either powerful small-scale prototypes for buildings or weak copies of powerful archetypes. Consideration of variety of architectural models from urban projects to dollhouses allows historical and theoretical exploration of models' agency. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS620S MODELS: PREMODERN TO POSTHUMAN

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST643S - Black Women, Black Freedom

Course Description
Examination of struggles for freedom, from nineteenth century through twenty-first, particularly through the lives of black women. Drawing on women's history, literature, art, performance and critical theory, students interrogate meaning of various freedoms, including civic and sexual. Objective is to discern a working definition for 'black freedom' by centering women in struggles for black liberation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS643S BLACK WOMEN, BLACK FREEDOM

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTHIST650S - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Graduate students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS650S BLACK CAMERA, AAAS531S BLACK CAMERA, CINE650S BLACK CAMERA, PHOTO650S BLACK CAMERA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ARTHIST691 - Independent Study

Course Description
Directed reading in a field of special interest, under the supervision of a faculty member, resulting in a substantive paper or report. Open to qualified students by consent of instructor and director of undergraduate studies.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTHIST695 - Art History Internship

Course Description
Academic study in conjunction with approved internship in the visual arts, art history, museums, and similar art institutions. Course work includes written reports and presentations. Supervision by art history faculty.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST705S - How to do Research Like an Artist: Contemporary Methods, Theories, and Practice

Course Description
This seminar presents research methodologies employed by contemporary artists who are active in major global movements including conceptualism, performance, environmental, and social practice art. At the border between theory and practice, the course invites students to experiment with these methods, and to consider how their academic study of art history and visual studies can learn from these research-based artistic practices. Final research projects combine scholarly research on these methodologies with experimental uses of them. Students that enroll in this course at the graduate level have differentiated assignments and assessment.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ROMST705S RESEARCH LIKE AN ARTIST

ARTHIST709S - Art & Democracy: Madrid/Barcelona/Bilbao

Course Description
Beyond the political poster and the large mural, was there a painterly art in the pre-digital age that found a fitting place on the street and the square, the quintessential citizen venues where democracy and populist politics first emerged? And is there a political praxis which may yield visual works of enduring value without sacrificing the imperative of communicability inherent in humanistic pursuits? Since the1960s such questions concerned committed Spanish artists in all styles (Tàpies, Genovés, Ibarrola, Saura, Equipo Crónica). Like Goya before them, these painters tried to help their society transition from tyranny to more inclusive forms of participation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH717S ART/DEMOCRACY/MADRID/BARCELON, LIT717S ART/DEMOCRACY/MADRID/BARCELON

ARTHIST710S - Modernism and Cultural Politics

Course Description
Issues of politics and art of the modernist period in Europe, focusing on movements significantly involved with and influenced by political thought and activism - from anarchism and Marxism to nationalism, neocatholicism, royalism, and fascism -and/or subject to recent politicized art historical interpretation. Topics may include the neo-impressionism; symbolism; catalanisme and the early Picasso; fauvism; primitivism, cubism; futurism; purism; the Bauhaus; deStijl; Russian avant-gardism; dada; and surrealism. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST713S - Jerusalem/Istanbul

Course Description
Constantinople/Istanbul was a great imperial city from its foundation, first Byzantine and Christian and then Ottoman and Islamic. As a center of economic, religious and political power, it has also been the site of formidable struggle. Jerusalem, a city venerated by the world's three dominant monotheistic religions, has been a site of spiritual and military conflict from biblical times to the present. Both cities present models of contentious urban spaces elsewhere. Our seminar investigates the contribution of a city's physical topography and its built fabric to urban violence.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION881S JERUSALEM/ISTANBUL

ARTHIST714 - Historical Geographic Information Systems (GIS)

Course Description
This is an introductory graduate Geographic Information System (GIS) course designed to help students develop GIS skills. The class emphasizes perspectives, procedures and tools that are relevant to applications of GIS in Art History and Humanistic disciplines. This course is designed as a hybrid lecture/lab format in which direct instruction is supplemented by hands on learning labs using ArcGIS software and real-world spatial data. The main skills students will gain are: Integration of spatial and tabular data, Geoprocessing, Data visualization, Creating features, Editing Features, Vector and Raster Integration, Spatial Analysis, Georeferencing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS715 HISTORICAL GIS, CMAC715 HISTORICAL GIS

ARTHIST715S - Outsiders and Insiders

Course Description
An exploration of the phenomenon in Europe and the Americas during the nineteenth and twentieth centuries, when critics began to differentiate between art from learned, civilized communities and art from an uneducated, barbaric population. From the Beaux-Arts and Volkerkunde to the debates surrounding primitivism, modernism, and popular culture. An examination of the idea of an art hierarchy and other concepts of artistic outsiders and insiders from a variety of positions, taking into account nationality, class, literacy, economics, race, and gender in the categorization and evaluation of art.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS720S OUTSIDERS AND INSIDERS

ARTHIST716S - Fascism East and West: The Visual Culture of Japan, Germany, and Italy

Course Description
Through a close analysis of cultural production and aesthetics, this course examines the relationship between the politics of fascism and its symbolic practices; how forms of rituals, myths, and images played a crucial role in the formation of the fascist regime's self-identity, and the formation of the national fascist subject. Materials include painting, sculpture, architecture, photography, graphic design, mass media, film, and forms of public spectacle and pageantry.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARTHIST718S - History of Conceptual Art

Course Description
This seminar concerns ekphrasis, the problem of using verbal representation to describe visual representation. Study of the interrelation between artists' theoretical writings and visual productions. Students may work on art and texts in all traditional and experimental visual art media, as well as in photography, video, film, and electronic multimedia.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARTHIST719S - Creative Cartography: Art and Science, Culture and Nature

Course Description
Students learn how maps and map-making has always existed in a contentious position between art & science, culture & nature. Course combines discussion of readings on critical cartography, data visualization, and Historical GIS (HGIS) w/ hands-on tutorials in ArcGIS, Adobe Illustrator, and analog drawing. Labs, final projects emphasize how the form of a map (and all its inherent presumptions of accuracy, reality, and precision) can be manipulated to make art that tells new stories about people, places, and things that run counter to dominant narratives. Prior experience w/ vector-based design software and/or GIS recommended, not required. Grad section: discussion lead, tutorials, exhibition.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS719S CREATIVE CARTOGRAPHY, CMAC719S CREATIVE CARTOGRAPHY, ISS719S CREATIVE CARTOGRAPHY

ARTHIST720S - Art History and Representation

Course Description
Seminar in the production of art history through various forms of representation, broadly construed, with special attention to issues of aesthetics, social context, historical location, and enunciative position. Consideration of practices of collecting, translation, display, and knowledge formation in order to explore the heterogeneous genealogy of art history.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST722S - Curatorial Practices in a Global Context

Course Description
History and critical theories of all experimental art from conceptual, performance, and installation to video and multimedia, collectives, and ecological and bioart considered in a global context including international exhibitions, biennials, and new curatorial practices.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS722S CURATORIAL PRACTICES

ARTHIST723S - Grant Writing and Prospectus

Course Description

Seminar required of all 3rd year graduate students in art history and visual & media studies. Focus on how to develop dissertation research prospectus and related grant proposals. Analysis of parallel forms (prospectus, grant proposal, book proposal, book introduction) to understand these related structures and the important questions they answer for reader. Oral presentation of their own developing prospectus or grant proposal helps students engage these principles in their own scholarship and allows them to develop professional skills.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

ARTHIST724S - Copies and Duplication

Course Description

Historical examination of duplication in the visual arts from antiquity to the present and how copies produce meaning. Students consider in depth the concepts and practices of duplication and originality in relation to their own interests and research focus. Subjects might include classical sculpture, modern forgeries, Chinese painting, photographic reproduction, prints and editions, film and the cinema, and seriality in modern art and architecture.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

ARTHIST725S - Women in Antiquity: An Intensive Methodological Introduction

Course Description

Gaining methodological introduction to study of women in antiquity; students also practice three crucial skills: how to research, how to discuss research, how to teach using specialized research. Subject of women in antiquity ideal vehicle (or test case) for these skills, as subject is inherently interdisciplinary and unavoidably fraught: unrecognized biases affect ancient evidence and contemporary scholarship.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CLST725S WOMEN IN ANTIQUITY

ARTHIST726 - Museum Theory and Practice

Course Description

Introduction to museum theory and the operation, with a particular focus on art museums. How theory and practice is negotiated in real world settings. Issues involve collecting practices, exhibition practices, and interpretive techniques, as well as legal and ethical issues. Taught at the Nasher Museum.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

ARTHIST727S - Greek Sculpture in Athens, Archaic to Roman

Course Description

Sculptural remains from Athens are exceedingly rich and extremely important for history of Greek art; most of our knowledge about Greek sculpture is derived from Athenian evidence. Hellenistic sculptors of Athens well known throughout the Mediterranean, working in Delos, Pergamon, Rome. Abundant literary and epigraphic evidence provides wealth of contextual information to reconstruct historical, political, and ideological circumstances of production and display of public statuary in Athens in a way that is not possible for any other ancient city except perhaps imperial Rome. Thorough understanding of Athenian material essential foundation for study of Greek sculpture. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST754S GREEK SCULPTURE IN ATHENS

ARTHIST728S - Architectural Theory: Vitruvius to Palladio

Course Description

Seminar focused on pre-modern architectural theory. Covers a wide temporal span between Vitruvius Pollio's De architectura libri decem (1st cent. BCE) and Andrea Palladio's Quattro libri dell'architettura (1570). Major treatises will be discussed as well as the relevant modern literature. Objective is to insure solid and broad knowledge of pre-modern architectural theory, related historiography, current debates and scholarship as well as to develop students' independent analytical and research skills. No textbook is adopted. Students will read the English translations of the treatises as well as a set of critical academic articles and books provided by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTHIST729S - The Museum Object: Art and Artifact on Display

Course Description

Technical study focusing on the material properties of artifacts and the technologies of art-making. Collection, exhibition, care, storage, handling, preservation, and conservation of objects in context with anthropological theory and legal and ethical considerations. Graduate-level assignments expected, and an appropriate graduate project to be developed over the course of the semester in consultation with the professor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ARTHIST730S - A Cultural and Spatial Analysis of the Ghetto: Venice, Nazi Occupied Europe, Chicago

Course Description
This seminar explores the cultural and spatial history of the Ghetto. From its origins in Venice through the spread of ghettos in Nazi-occupied Europe to the segregation of African-American populations in Chicago, specific spaces have been designated as ghettos. This designation has had an impact on the social understanding of architectural form, but it has also generated many cultural responses in material culture, art, photography, film, and other media. The course will explore the cultural understanding of the ghetto with a specific emphasis on the Jewish ghettos in Nazi-occupied Europe but with a comparative look at Venice and Chicago.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN730S A CULTURAL ANALYSIS OF GHETTOS, JEWISHST730S A CULTURAL ANALYSIS OF GHETTOS, HISTORY730S A CULTURAL ANALYSIS OF GHETTOS

ARTHIST731S - The Bauhaus: Architecture, Design, Politics

Course Description
This seminar analyzes the history of the Bauhaus, from its roots in Weimar Germany to its impact on framing post World War II international Modernism. It covers major scholarship on Modernism, architecture, and design as well as central questions of twentieth-century art and politics. Grounded in the foundation and activity of the school in Germany after World War I, the seminar will also cover the spread of Bauhaus ideas, faculty, and students internationally including in Japan, Turkey, the United States, and on both sides of the Cold War.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN731S THE BAUHAUS, VMS731S THE BAUHAUS

ARTHIST732S - Women in Art: Early Modern Women Artists, Patrons, and Networks

Course Description
Course focuses on women artists in early modern Italy and Europe. Issues of education and training, practice, patronage, professional networks, and markets will be at the center of attention along with issues of historiography and feminist theory. Objectives are to ensure solid knowledge of the artistic practice of women in early modern Europe within the relevant social, legal, and financial contexts; mastery of the relevant theoretical frameworks, current debates, and scholarship; and development of students' independent analytical and research skills. No textbook is adopted. Students will read and discuss a set of critical books provided by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF732S WOMEN IN ART

ARTHIST733L - Virtual Museums: Theories and Methods of Twenty-First-Century Museums

Course Description
The future of museums will be one of immateriality and interaction. Course focuses on how the 'Internet of Things,' augmented reality technologies, new data analyses of artifacts will transform missions, roles, and goals of museums and collections. Core of course will be digital lab sessions focused on virtual reconstruction of lost heritage—e.g., museums and sites destroyed and damaged by ISIS and other conflicts in Iraq and the Middle East (Hatra, Nineveh, Nimrud, Baghdad). Graduate students will be assigned additional critical readings and be expected to write a final research paper of 3000 words based on a topic related to their interests worked out with the professor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS733L VIRTUAL MUSEUMS, CMAC733L VIRTUAL MUSEUMS, ISS733L VIRTUAL MUSEUMS, CLST733L VIRTUAL MUSEUMS

ARTHIST734S - Renaissance Architecture: Theories and Histories

Course Description
Seminar on the theory and history of Renaissance architecture in Italy and Europe. Focuses on the fifteenth and sixteenth centuries but covers a wider chronological span (1300-1700) in order to frame notions of Renaissance with regard to categories such as Gothic, Baroque, and Classical. Readings include theoretical and/or historical works foundational to the field and subfield—such as Vasari's Lives (1568), Burckhardt's Architecture of the Italian Renaissance (1878), and Wo¨lfflin's Renaissance and Baroque (1888)—as well as modern classics such as Wittkower's Architectural Principles (1949), Carpo's Architecture in the Age of Printing (2001), and Tafuri's Princes, Cities, Architects (1992).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTHIST735S - Photo Fever: Curating Photo Exhibitions

Course Description
Curation of photography exhibitions and engagement with public audiences. Project-based course explores ways photo- and image-based artists, journalists, scholars, policymakers, and activists use photography to convey personal expression and shape public opinion around contemporary social and political issues. Through field trips to museums and alternative venues, students gain theoretical and practical guidance on presenting photography work to the public, in-person and virtually. Development of editorial publications, programming, and media strategies. Students curate photo exhibitions in campus and community venues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST733S CURATING PHOTO EXHIBITS, ARTSVIS735S CURATING PHOTO EXHIBITS

ARTHIST736S - The Art & Politics of Cotton

Course Description
Cotton played a critical role in the development of both modern economies and modern cultures. This course focuses on cotton's role in the capitalist United States from the Civil War period to now and the socialist USSR from its inception in 1917 to its demise in 1991. We will look at visual objects that reflect the history of cotton in both economies and will emphasize the influence of the cotton trade on modern African American and Soviet art in Central Asia. We will explore slavery, race, and racism in both capitalist and socialist culture within the context of cotton. The course includes visits to relevant sites and offers an introduction to the visual history of the cotton trade.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SES735S THE ART AND POLITICS OF COTTON, AAAS736S THE ART AND POLITICS OF COTTON

ARTHIST737S - Art and History of Botany

Course Description
This seminar investigates the intertwined histories of art and botany from antiquity to the present. This hands-on seminar traces how methods of botanical visualization changed over time in response to intellectual, epistemic, and technological shifts as well as social and political pressures. Students will learn about the history of art and botany through creative projects, botanical labwork, and field trips to the Duke herbarium, greenhouse, gardens, and special collections.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS737S ART AND HISTORY OF BOTANY

ARTHIST738S - Avant Garde Artistic Networks in and around the USSR

Course Description
This course examines the activities of avant-garde networks in and around the USSR. These include the October Association, TatLEF, and the International Bureau of Revolutionary Artists (MBRKh). We will explore the role of avant-garde art schools in network development, including VKhUTEMAS and the Mezhyhirya Art and Technical School near Kyiv. We will examine how the networks formed, their objects and pedagogies, their influence on visual politics, and on international networks of leftist artists. We look at the powerful influence of these networks on anti-imperial/anti-racist modernisms. The course offers an understanding of network practices within the politics of the interwar avant-garde.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN738S AVANT GARDE: ART AND NETWORKS

ARTHIST739S - Pilgrimage and Tourism

Course Description
Investigation of pilgrimage and tourist destinations (e.g. Jerusalem, Mecca, Las Vegas, Dubai) and those places' mementos from the Middle Ages to the present through a study of their material remains, primary sources and theoretical texts. Discussion of the moral and ethical issues involved in marketing authenticity from a cross-cultural and comparative perspective. Evaluation based on weekly student written assessments of the texts and the presentation of the pilgrimage site or the relic/souvenir of their choice. Sites/objects under consideration will vary annually.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST741S - The Symbolist Movement in the Arts and European Thought

Course Description
Investigates the relationship linking Symbolist aesthetics and practice with currents in European philosophy in the late nineteenth and early twentieth centuries. The reaction against Positivism; aesthetic idealism and the Platonic tradition; the influence of Schopenhauer and Nietzsche on artists and writers; Symbolism and mysticism (Theosophy, Rosicrucianism, the occult); Symbolism and the Catholic revival; Art nouveau and theories of psychology; the anarchist impulse. Emphasis on visual arts in France, England and Germany; focus on the relationship between word and image in Symbolist poetics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT741S THE SYMBOLIST MOVEMENT, VMS741S THE SYMBOLIST MOVEMENT

ARTHIST743S - Media and Mediation

Course Description
This graduate seminar introduces students to anthropological scholarship on the politics of media. We begin with classic theoretical works on mass media the early twentieth century and progress to contemporary anthropological scholarship on the interplay between media, culture, and politics. Our seminar will pay particular attention to issues of photography and visuality; media and/of war; technologies of witnessing; the cultural politics of music and sound; media and globalization; social media and grassroots politics. This graduate seminar will focus on professionalizing strategies, culminating in a proto-publishable research paper that draws on class material.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH743S MEDIA AND MEDIATION, VMS743S MEDIA AND MEDIATION

ARTHIST745S - Women in Visual Arts, 1400-1800: Theory and History

Course Description
Through lectures, discussion and individual projects, this course considers the roles women played in the Early Modern art world as makers, buyers, patrons, donors, critics, and art collectors. It also takes up issues of gender, masculinity and femininity. A central theme of this class is how the so-called Woman Question, which was essentially an ongoing quarrel about the nature and social role of women, shaped the representations and experiences of women of different classes and conditions. We will focus on visual representations, as well as period writing of and by women. This course will offer students opportunities to understand how the past can help us to think about the present.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTHIST761S - Art & Environment in the Islamic World

Course Description
The Islamic world spans a vast array of landscapes and climates that each present unique challenges to their human occupants. This seminar explores how artists, architects, patrons, and urban planners in the Islamic world related to these diverse environments and their many nonhuman inhabitants. Investigating the intersections of archaeology, art and architectural history, climate history, eco-criticism, environmental history, garden and landscape studies, manuscript studies, and legal and religious studies the class centers on case studies from areas including Pre-Islamic Arabia, the Umayyad Levant, Abbasid Iraq, Umayyad Iberia, Norman Sicily, Mamluk Egypt, Nasrid Granada, and Mughal India.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTHIST775S - Queer Art - Graduate

Course Description
This seminar applies phenomenology to writing and thinking about art. Beginning with primary debates concerning how things present themselves to perception (Husserl, Heidegger, Shapiro, Merleau-Ponty, Beauvoir, Sartre), the course then considers poetic extrapolations (Fanon, Focillon, Bachelard), culminating in contemporary accounts (Nesbit, Salamon, Wainwright, and Ahmed) that interrogate phenomenology's basic precepts while employing its methods to address art in relation to bodily experience, identity, sexual orientation, and social context. Short exercises and a final paper provide students with the opportunity to work through these ideas in light of their own interests and research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT775S QUEER ART

ARTHIST776S - Modern Spectacles 1790–Present

Course Description
Drawing on landscape painting, theater, carnival, and scientific demonstration, modern spectacles immerse viewers in a particularly European imaginary of identity and otherness. This seminar addresses three periods: 19th-century boulevard spectacles (magic lantern, panorama, etc.); 20th-century habitat dioramas that present species and cultures in place and time; and contemporary installations that seek to recreate the 'spectacle experience' with new

tools. Case studies are discussed in relation to themes that traverse period, including colonialism, magic, anti-modernism, urban lighting, and the experience of time. Graduate students will participate in the weekly seminar, write/present a midterm summary on their approach and topic, and write/present an original research paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
THEATRST776S MODERN SPECTACLES

ARTHIST778S - Chinese Buddhist Art

Course Description
Chinese sculpture, painting, and architecture in relation to Buddhist texts, practice, and ritual from the fourth through the ninth century CE. Introduction to precedents in Indian and Central Asian Buddhist art. Emphasis on the relationship between Buddhist and non-Buddhist imagery.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST779S - Modern Spectacles 1790 - Present

Course Description
Drawing on landscape painting, theater, carnival, and scientific demonstration, modern spectacles immerse viewers in a particularly European imaginary of identity and otherness. This seminar addresses three periods: 19th-century boulevard spectacles (magic lantern, panorama, etc.); 20th-century habitat dioramas that present species and cultures in place and time; and contemporary installations that seek to recreate the 'spectacle experience' with new tools. Case studies are discussed in relation to themes that traverse period, including colonialism, magic, anti-modernism, urban lighting, and the experience of time. Graduate students will participate in the weekly seminar, write/present a midterm summary on their approach and topic, and write/present an original research paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST780 - Visualizing Cities: Representing Urban Landscapes, Cultures, and Environments

Course Description
Exploring digital and visual representation of landscapes, structures, environments, history, culture, architecture, events, and populations. Change over time, cultural heritage, possible futures, and alternate pasts from historical, cultural, documentary, and scientific evidence. Idea of city as a conceptual category and metaphor. Ubiquitous computing in urban environments/medium for interaction. Global cities and diaspora. Visual imager and written accounts. Use of mapping, imaging, 3D, augmented reality, games. The graduate version includes both the final digital project and a theoretically-informed graduate seminar paper. Topics and historical foci vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS780 VISUALIZING CITIES, CMAC780 VISUALIZING CITIES, HISTORY779 VISUALIZING CITIES

ARTHIST783 - The Black Atlantic

Course Description
The African diaspora is a direct result of the transatlantic slave trade and Western colonialism, and has generated a wide array of artistic achievements, from the 'shotgun' houses of New Orleans to the urban graffiti of NYC. The course surveys several major cultural groups in West and Central Africa and their aesthetic impact on the arts, religions, and philosophies of peoples of African descent in South America, the Caribbean, and the United States.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTHIST786S - Islam, Art, & Society

Course Description
This course explores the interweaving of Islamic theology, spirituality, art, architecture, mathematics, and astronomy in the beautification of everyday objects and lived spaces. It examines how underlying principles of beauty and sacred geometry have shaped places such as hospitals, palaces, gardens, colleges, mosques, inns, and Sufi lodges as well as their historical functions in Muslim societies. Case studies include a range of diverse sites and cultural artifacts from across Afro-Eurasia.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION786S ISLAM, ART, & SOCIETY

ARTHIST790 - Topics in Art History

Course Description
In-depth consideration of a specific art historical problem of a formal, historical, or conceptual nature. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARTHIST790S - Special Topics in Art History

Course Description
Topics vary by semester. Subjects, areas, or themes that embrace the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST791 - Individual Research in Art History

Course Description
Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARTHIST792 - Individual Research in Art History

Course Description
Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ARTHIST795S - Digital Art History/Computational Media Thesis Writing Workshop

Course Description
Support for the writing of the thesis paper through multiple drafts and group discussion. Writing of documentation and reflection of the MA in Digital Art History/Computational Media digital project.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HCVIS795S MA THESIS WRITING WORKSHOP, CMAC795S MA THESIS WRITING WORKSHOP, VMS795S MA THESIS WRITING WORKSHOP

ARTHIST802S - Atheisms before Secularism from Socrates to Spinoza

Course Description
Examines atheism as a philosophical, theological, material, and political category across premodern Europe and the Middle East.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION802S ATHEISMS BEFORE SECULARISM, CLST802S ATHEISMS BEFORE SECULARISM

ARTHIST844S - Protestants and Pictures

Course Description
History of Protestant visual culture from the sixteenth century to the present. Explores images and visual practices that characterize the early formation of European Protestantism, primarily Germany, France, and England, then moves outward to North America and Africa and Asia from the nineteenth century to the present. Special interest in the history of print and mass-produced imagery.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION844S PROTESTANTS AND PICTURES

ARTHIST859S - Roman Catholic Visual Piety in the Modern Era

Course Description
An examination of leading themes, imagery, and visual practices in Catholic devotion to saints since the sixteenth century in Europe, North America and beyond. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION859S CATHOLIC VISUAL PIETY, VMS859S CATHOLIC VISUAL PIETY

ARTHIST911S - Religious Material Culture in Theory and Practice

Course Description
Examines prevailing theories and methods of studying objects, spaces, images, and the senses as primary forms of evidence for understanding religions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION911S RELIGIOUS MATERIAL CULTURE, CLST729S RELIGIOUS MATERIAL CULTURE

ARTHIST590S-1 - Special Topics in Greek Art

Course Description
Problems and issues in a specific period or genre of Greek material culture. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST590S SPECIAL TOPICS IN GREEK ART

ARTHIST590S-11 - Special Topics in Greek Archaeology

Course Description
Focused studies in Greek archaeology on specific themes, assemblages or problems. Offerings might include Homeric Archaeologies, Greek Sanctuaries, Hero Cult, War and Commemoration, Western Greece, vel sim.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST590S-1 SP TOP GREEK ARCHAEOLOGY

ARTHIST590S-5 - Topics in African Art

Course Description
Specific problems of iconography, style, connoisseurship, or a particular art tradition in African art. Subject varies from year to year. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS590S-5 TOPICS AFRICAN ART

ARTHIST590S-8 - Topics in Modern Art

Course Description
Selected themes in modern art before 1945, with emphasis on major movements or masters. Subject varies from year to year. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTHIST590S-9 - Topics in Art since 1945

Course Description

Historical and critical principles applied to present-day artists and/or movements in all media since World War II. Consent of instructor required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

ARTS&SCI750S - Pedagogical Strategies for Interdisciplinary Learning

Course Description

This graduate-level, hybrid course provides an immersive, cohort-based opportunity for students to develop expertise in pedagogical practices while actively engaging with interdisciplinary teaching and learning. Designed for graduate students serving as Graduate Constellations Fellows, the course integrates theory and practice, equipping students with essential skills in curriculum development, assessment design, instructional innovation, and student engagement strategies. Through interactive workshops, expert-led discussions, and hands-on project development, students will explore effective digital pedagogy, inclusive teaching strategies, AI-assisted learning tools, and assessment methodologies. In-person meetings May and August, bookending online, synchronous sessions in June and July.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

ARTS&SCI790 - University Course (Special Topics)

Course Description

Interdisciplinary course on topics of social relevance, sponsored by the Dean of Arts & Sciences. Course is paired with ARTS&SCI 390. Graduate students attend class together with undergraduates, but require sponsorship by a faculty member in their home department or school to assign additional graduate level work, evaluate their papers, and assign a grade. Topics vary each year. (Note: as an alternative, graduate students may choose to register for this course directly with their faculty sponsor as an Independent Study.)

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

ARTS&SCI795 - Bass Connections: Interdisciplinary Team Projects

Course Description

Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires substantive final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTS&SCI795-1 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ARTS&SCI796 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires substantive final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTS&SCI796-1 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ARTSVIS502S - Analog Filmmaking and Darkroom Techniques

Course Description
Investigation of experimental cinematographic techniques and darkroom processes. Exercises and lab experiments to inform a final project. Suggested prerequisite: Cinematic Arts 356S.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE502S ANALOG FILMMAKING AND DARKROOM, VMS502S ANALOG FILMMAKING AND DARKROOM, DOCST502S ANALOG FILMMAKING AND DARKROOM

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARTSVIS510S - Neosentience: A Potential Future Form of AI and Research Platform Development via Unreal Game Engine

Course Description
Course explores a future form of AI called Neosentience based on mind/brain/body/environment relations (biomimetics). Weekly reports/discussions explore the topic from many perspectives related to different disciplinary understandings exploring humanistic, conceptual, computational & aesthetic paradigms—Conceptual Art. Students explore research driven by their disciplinary interests, feeding into real-world team-based research and discussion. Unreal Game Engine is being developed as a research platform/visualization system – Insight Engine 2.0. Students develop particular aspects of research: focused literature review, write a major research paper and/or define a related digital project.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS510S NEOSENTIENCE: FUTURE AI FORM, ISS666S NEOSENTIENCE: FUTURE AI FORM, CMAC666S NEOSENTIENCE: FUTURE AI FORM

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

ARTSVIS558S - Business Strategies for the Arts and Artists

Course Description
Students will learn professional development skills specific to the artistic fields. Students/Artists will learn to develop business plans, write grant applications, learn negotiation skills, how to present their work to the public, develop artists statements, and develop/maintain websites and portfolios. The course will allow the student to sustain themselves as a practicing artist.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS558S BUSINESS STRATEGIES FOR ARTS, THEATRST558S BUSINESS STRATEGIES FOR ARTS, DOCST558S BUSINESS STRATEGIES FOR ARTS

General Education Curriculum Codes
R - (R) Research

ARTSVIS564S - Physical Computing

Course Description
Seminar in physical computing, creative coding, and the emerging artistic possibilities of the Internet of Things. Emphasis on the medial physicality of computation, and exploration of interfaces to the computational that depart from the keyboard, mouse, and screen. Discussion of the social implications of 'smart' objects. Hands-on development of individual and group projects using Arduino, an extension of C/C++, internet-enabled microprocessors, and an array of analog and digital sensors and actuators. Topics also include networking, communication protocols, circuit design, and physical prototyping.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS555S PHYSICAL COMPUTING, VMS564S PHYSICAL COMPUTING, CMAC564S PHYSICAL COMPUTING

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, QS - (QS) Quantitative Studies

ARTSVIS571S - Art as Work: Valuing Labor in the Arts

Course Description
Interdisciplinary seminar on work, working identities, and workplace performances in the arts. Enrolled graduates and advanced undergraduates review theories of artistic production, labor, and value across the analytical traditions of cultural labor studies, critical race and feminist studies, dance and performance studies. Analysis of dominant representations of arts labor and entrepreneurship from arts management, administration and policy discourse. Our goal is to highlight institutional pressures that constrain enabling environments for the arts. Culminating research projects analyze and interpret local arts workworlds, including but necessarily students' own.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE561S ART AS WORK, LIT525S ART AS WORK, VMS571S ART AS WORK, THEATRST561S ART AS WORK

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ARTSVIS575S - Generative Media Authorship - Music, Text & Image

Course Description
Covers Generative Media in all its forms. Lectures, workshops, discussions, one semester-length project, shorter individual exercises and readings. Interdisciplinary Graduate Seminar with advanced undergraduates and MFA students with permission of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS575S GENERATIVE MEDIA AUTHORSHIP, ISS575S GENERATIVE MEDIA AUTHORSHIP, MUSIC575S GENERATIVE MEDIA AUTHORSHIP, CMAC575S GENERATIVE MEDIA AUTHORSHIP

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

ARTSVIS590S - Special Topics in the Visual Arts

Course Description
Subjects, areas, or themes that embrace a range of disciplines or visual art areas.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTSVIS605 - Intermediate Drawing

Course Description
This course allows students to explore their artistic interests and biases through a series of self-directed projects. Both the directness and the flexibility of the medium of drawing are investigated.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTSVIS606 - Advanced Digital Practice

Course Description
This project-based course focuses on advanced techniques in digital imaging, with emphasis on 2D digital design and/or 2D time-based media. Students will develop an exhibition-worthy portfolio of 2D digital imaging and time-based media work, accompanied by an artistic statement that discusses the work in the context of the field. The student's work will be coherent and reflective of the development of a unique and independent visual style informed by a deep understanding of historical and contemporary design. Digital projects will be supplemented with readings, discussions, and sustained artistic critique, critically relating student work to major movements and debates in art and design. Prerequisite: Visual Arts 206, 223, or 381, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS606 ADVANCED DIGITAL PRACTICE, CMAC606 ADVANCED DIGITAL PRACTICE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

ARTSVIS618S - Theories of the Visual

Course Description
Examines the 'visual' as concept of major concern that traverses the debates of the modern and postmodern periods. Expands from the technological (painting, photography, cinema, television, and computation) to the theoretical and philosophical interpretation of visual culture. Examines major periods: from philosophical critique of visuality in 19th and early 20th c., to the height of cultural theory and criticism up until the 1970s; from the late 20th c. to the contemporary period that includes debates that expand our understanding of visual experience. Ends with introducing work that aims at decentralizing Western thought in the debate.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT618S THEORIES OF THE VISUAL, CINE618S THEORIES OF THE VISUAL, CMAC618S THEORIES OF THE VISUAL, ROMST618S THEORIES OF THE VISUAL, VMS618S THEORIES OF THE VISUAL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARTSVIS635S - Artificial Intelligence application and research in the Arts and Humanities

Course Description
Where do artificial intelligence, computational thinking and knowledge production intersect with humanist inquiry and visual aesthetics? This course centers on the production and output of humanist research, creative visual design, artwork and artifacts through machines and algorithms. The roles of authorship, data creation, data ethics, creativity and aesthetics will be interrogated through readings and research on theoretical texts and existing modes of cultural production. Students are expected to contribute to the course as technological makers, humanists, artists, hackers and engineers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS635S AI IN THE ARTS AND HUMANITIES, CMAC635S AI IN THE ARTS AND HUMANITIES

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

ARTSVIS640S - Expanded Cinema: Cinema Outside the Movie Theater

Course Description
This project-based course will explore moving image installation practices beyond the movie theater including alternative public spaces, devices, museums, white cubes and back boxes. The course will simultaneously examine relevant artworks in the context of their diverse histories and attendant theories, from early cinema devices, through works termed as Expanded Cinema around the 1970s, to current new media manifestations. Students will focus on developing moving image installation projects of their own, to be realized at various campus locations. Open to seniors and graduate students. Prerequisite: Two 200-level or above photography or film production classes.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE639S EXPANDED CINEMA, VMS640S EXPANDED CINEMA, DOCST640S EXPANDED CINEMA, LIT545S EXPANDED CINEMA

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ARTSVIS641SL - Narrative Practice in Global Art Cinema

Course Description
Advanced in-depth examination of alternative narrative and doc-fiction practices emerging from national cinemas around the world. Intended for advanced undergraduate and graduate students with prior production experience. Screenings and readings related to significant national cinema movements and practitioners will inform production exercises, writing assignments and a final moving image project.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE643SL GLOBAL ART CINEMA, VMS641SL GLOBAL ART CINEMA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ARTSVIS655S - The Photographic Portfolio

Course Description
Students identify photographic territory to explore and build a body of work. Images are extensively work-shopped for sequencing. Particular emphasis on the making of high quality prints. Semester culminates in the production of finished portfolios in three formats: print, digital, and exhibition or installation. Student's body of work to be informed by relevant precedents from history of photography, with an emphasis on identifying bodies of photographic work that communicate something larger than a single idea. Instructor consent required; this is the same course as Visual Arts 455, with additional graduate level work required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHOTO655S THE PHOTOGRAPHIC PORTFOLIO

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

ARTSVIS690S - Special Topics in the Visual Arts

Course Description
Subject varies from year to year.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTSVIS693 - Individual Research Independent Study

Course Description
Advanced research in Visual Arts practice. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

ARTSVIS694 - Individual Research Independent Study in the Visual Arts

Course Description
Advanced research in Visual Arts Practice. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

ARTSVIS706 - Digital Imaging

Course Description
Photoshop and Illustrator used to introduce single and serial images for print and web output. Graduate students required to create an intensive portfolio of work investigating a relevant research topic. Graduate section offered in conjunction with undergraduate course Visual and Media Studies/Visual Arts 206. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS706 DIGITAL IMAGING, CMAC706 DIGITAL IMAGING, ISS706 DIGITAL IMAGING

ARTSVIS707 - User Experience and User Interface Design and Development

Course Description
How do we build knowledge about computational, aesthetic, product and spatial experience? What tools and methods enable our work in the design of these interactions? This course applies methods and technologies found in the User Experience (UX) and User Interface (UI) disciplines to analyze, document, design and prototype a number of spatial and product interactions. Readings and matched contextualization writing on UI/UX design will locate student work in terms of both theory and history. Grad section: add'l written component; historical readings will be paired with a written paper contextualizing the student's term project within the theoretical framework developed through readings.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC717 UI / UX DESIGN, ISS717 UI / UX DESIGN

ARTSVIS710 - Sculpture

Course Description
This course provides the opportunity for a program of self-directed graduate-level work in sculptural principles, processes, and issues introduced through lectures, readings, studio assignments, individual projects, and discussion. Ongoing reflection on contemporary sculpture is core to this class, through discussion and/or critical writing. Regular individual and group critiques monitor the progress of each independent project, and field trips.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ARTSVIS711S - Video, Art, Politics

Course Description
This class teaches aspects of conceptual video production within a study of historical work by artists responding to still-current political concerns, such as anti-Black police violence, the AIDS pandemic, electoral disenfranchisement and spectacle, and mass incarceration. With attention to the complex relationships between politics and aesthetics, we will consider contemporary video as cinematic form, gallery exhibition, web stream, broadcast television, and social process, or used as act of witness, tactical media intervention, political prank, and legal/physical defense strategy. Classwork includes individual and collective video production and extensive group critique. Graduate requirements will include additional weekly readings and screening, and final reflective writing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE711S VIDEO, ART, POLITICS, DOCST711S VIDEO, ART, POLITICS

ARTSVIS717S - Documentary Photography and the Southern Culture Landscape

Course Description
Emphasis on the tradition and practice of documentary photography as a way of seeing and interpreting cultural life. The techniques of color and black-and-white photography—exposure, development, and printing—diverse ways of representing the cultural landscape of the region through photographic imagery. The role issues such as objectivity, clarity, politics, memory, autobiography, and local culture play in the making and dissemination of photographs. Open only to graduate students in the MFAEDA program.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ARTSVIS718S - Movement in Question: Proseminar in Critical Dance Studies

Course Description

This writing-intensive seminar engages graduate students in multiple ways with the interdisciplinary field of critical dance studies. Students will read and analyze foundational texts and theories on dance and movement from global perspectives and rehearse a honed capacity to interpret movement on semiotic, phenomenological, cultural, and material grounds in their writing. Participatory movement workshops integrate adaptive activities that make gaps between textual representation and embodiment visible. This holistic approach throws movement into question and centralizes dance as a critical way of making the world. Zero formal dance experience is required. Graduate students from all backgrounds are welcome.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

DANCE718S MOVEMENT IN QUESTION, GSF718S MOVEMENT IN QUESTION

ARTSVIS719S - Creative Cartography: Art and Science, Culture and Nature

Course Description

Students learn how maps and map-making has always existed in a contentious position between art & science, culture & nature. Course combines discussion of readings on critical cartography, data visualization, and Historical GIS (HGIS) w/ hands-on tutorials in ArcGIS, Adobe Illustrator, and analog drawing. Labs, final projects emphasize how the form of a map (and all its inherent presumptions of accuracy, reality, and precision) can be manipulated to make art that tells new stories about people, places, and things that run counter to dominant narratives. Prior experience w/ vector-based design software and/or GIS recommended, not required. Grad section: discussion lead, tutorials, exhibition.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ARTHIST719S CREATIVE CARTOGRAPHY, CMAC719S CREATIVE CARTOGRAPHY, ISS719S CREATIVE CARTOGRAPHY

ARTSVIS720 - Intermediate Painting

Course Description

Studio in intermediate oil painting techniques: brushwork, blending, wet-on-wet vs. dry brush, glazes and washes. Work from observation and learn how to see and mix color independently. Develop original conceptual ideas and translate them into a visual language. Seeking to both establish and extend their vernacular, students create paintings with visual narratives as well as abstraction. Course may be repeated for credit. Course assumes prior experience in painting. Development of specific graduate-level work in consultation with the instructor expected.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

ARTSVIS721 - Intermediate Sculpture

Course Description
Graduate studio practice in sculpture at the intermediate level. Explore the possibilities of sculpture as an expressive medium through the creative use of material, shape, mass, movement, edge, texture, space, place, and repetition. Group and individual discussion and critique. Students explore new media and practice safe operation of machines and tools. Students required to create three sculptures that revolve around the theme of their graduate thesis and to write a one-page concept for each work. Students also research two artists who work in like themes to understand how to strategize and execute their work and concept. Prerequisite: Visual Arts 710 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTSVIS733L - Virtual Museums: Theories and Methods of Twenty-First-Century Museums

Course Description
The future of museums will be one of immateriality and interaction. Course focuses on how the 'Internet of Things,' augmented reality technologies, new data analyses of artifacts will transform missions, roles, and goals of museums and collections. Core of course will be digital lab sessions focused on virtual reconstruction of lost heritage—e.g., museums and sites destroyed and damaged by ISIS and other conflicts in Iraq and the Middle East (Hatra, Nineveh, Nimrud, Baghdad). Graduate students will be assigned additional critical readings and be expected to write a final research paper of 3000 words based on a topic related to their interests worked out with the professor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST733L VIRTUAL MUSEUMS, CMAC733L VIRTUAL MUSEUMS, ISS733L VIRTUAL MUSEUMS, CLST733L VIRTUAL MUSEUMS

ARTSVIS735S - Photo Fever: Curating Photo Exhibitions

Course Description
Curation of photography exhibitions and engagement with public audiences. Project-based course explores ways photo- and image-based artists, journalists, scholars, policymakers, and activists use photography to convey personal expression and shape public opinion around contemporary social and political issues. Through field trips to museums and alternative venues, students gain theoretical and practical guidance on presenting photography work to the public, in-person and virtually. Development of editorial publications, programming, and media strategies. Students curate photo exhibitions in campus and community venues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST733S CURATING PHOTO EXHIBITS, ARTHIST735S CURATING PHOTO EXHIBITS

ARTSVIS740S - Producing Docu-Fiction

Course Description
Investigation of hybrid, genre-defying films that question traditional definitions of documentary and fiction. Emphasis on experimental forms, documentary reenactment, mockumentary and dramatized 'true stories.' Exploration of both documentary and fiction production techniques, culminating in the production of a final video. Graduate-level assignments and advanced project work expected and developed in consultation with the professor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS740S PRODUCING DOCU-FICTION, CINE702S PRODUCING DOCU-FICTION

ARTSVIS748S - Advanced Art Research and Lab Practice

Course Description
Advanced research in the arts, cultural production, studio practice, and experiential inquiry. Students may focus on independent productions with regular advice and facilitation from the instructor, meet as a group to create common projects through lab research and production teams, or develop their own curricular formats in collaboration with the instructor as they produce their most advanced artworks within a research university setting. Interdisciplinary approaches balanced with strong backgroung in specific artistic media. Recommended for graduate students (MA, MFA, PhD).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS748S ADVANCED ART RESEARCH AND LAB

ARTSVIS753S - Cinematography II Graduate

Course Description
Course explores the approaches, strategies, motivations, and creative processes that inform cinematography. Elements of cinematic style, visual imagination, and storytelling are discussed and explored through exercises. Students learn the relationships and responsibilities involved in the art, and are guided in the execution of the various canonical and extraordinary working methods involved in traditional, experimental, and modern cinematography. Graduate students will be required to complete summary written and production work befitting their experience. Suggested prerequisite: CINE 749S.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE753S CINEMATOGRAPHY II, VMS753S CINEMATOGRAPHY II, DOCST753S CINEMATOGRAPHY II

ARTSVIS767S - Advanced Visual Practice

Course Description
Students work on independent visual arts projects in a group situation. Students meet weekly with professor teaching course to discuss progress and monthly with full Visual Arts and Visual and Media Studies faculty for critiques. Graduate students will additionally submit a short paper. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ARTSVIS768S - The View Camera: Black and White Large Format Photography

Course Description
Advanced, production-based photography course introduces students to the 4 x 5 large format view camera and its role in the documentary tradition. Learn to operate a view camera and attendant processes and materials to develop black and white sheet film and make silver gelatin contact prints from 4 x 5 negatives. Begins with focus on black and white negatives and contact prints. After demonstration of proficiency, students may optionally work in color film. Students produce a final portfolio of prints from their work throughout the semester. Class meetings consist of lectures, demonstrations, darkroom work, and critique of both process and final images.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST768S THE VIEW CAMERA

ARTSVIS775S - Recycled Cinema

Course Description
Found footage filmmaking, cinematic appropriation, the use of archival materials in documentaries, and current day internet mashups. Covering early cinema, experimental and documentary cinema, television, and the internet. Key emphasis on practice based assignments with a concurrent focus on the historical impact of the field from seminal moments to the contemporary moment through films and readings on the subject. Graduate students in this course will be required to work on an additional final project at a higher level of complexity based on a proposal created in consultation with, and approved by the faculty.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS775S RECYCLED CINEMA, DOCST776S RECYCLED CINEMA, CINE775S RECYCLED CINEMA

ARTSVIS781S - Graphic Design in Motion

Course Description
Motion design is the creation of animated graphics using graphic design, typography, advertising, photography, animation, sound and filmmaking. Emphasis will be placed on design, conceptualization and the ability to communicate ideas and work collaboratively. Students will learn the language and principles of graphic design by developing a method for solving design problems, communicating ideas effectively, and creating professional motion design such as title credits, logo animations, and music and experimental videos that can be integrated into film, live performance or web. Photoshop, Illustrator, After Effects, and video editing software will be used. Recommended prerequisite: experience in animation, film and video production, or graphic design.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS781S GRAPHIC DESIGN IN MOTION

ARTSVIS790S - Special Topics in Visual Arts

Course Description
Subject varies from year to year.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ARTSVIS794L - Interactive Graphics: Critical Code

Course Description
Interactive graphics programming for artists. This class explores object-oriented programming via the P5.js and ML5.js programming environments and develops an appreciation of interactivity and computer graphics as artistic media. Students strengthen their graduate-level artistic practices through an aesthetic and conceptual engagement with interactive art. Graduate-level projects incorporate themes, language, and theory from current practices into works developed throughout the semester. Projects extend p5.js by incorporating additional libraries, the development of backend systems, or the development of additional technologies.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS794L INTERACTIVE GRAPHICS, VMS794L INTERACTIVE GRAPHICS, CMAC794L INTERACTIVE GRAPHICS

ARTSVIS850S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

BA910 - Bayesian Inference and Decision

Course Description
Methods of Bayesian inference and statistical decision theory, with emphasis on the general approach of modeling inferential and decision-making problems as well as the development of specific procedures for certain classes of problems. Topics include subjective probability, Bayesian inference and prediction, natural-conjugate families of distributions, Bayesian analysis for various processes, Bayesian estimation and hypothesis testing, comparisons with classical methods, decision-making criteria, utility theory, value of information, and sequential decision making.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA502 BAYESIAN INFERENCE & DEC

BA911 - Convex Optimization

Course Description
Formulation and structure of convex optimization problems with an emphasis on duality. Extensive treatment of linear optimization. Network flows, discrete optimization, and conic (quadratic and semi-definite) optimization. Motivated by examples from economics, engineering, finance, and statistics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BA912 - Dynamic Programming and Stochastic Control

Course Description
This course covers fundamental models and solution techniques for sequential decision making under uncertainty. Both exact and approximation methods will be discussed. Applications of dynamic programming will be drawn from engineering, economics, operations management, and finance.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA913 - Choice Theory

Course Description
This seminar deals with the foundations and applications of the theory of rational choice, including Bayesian decision theory (subjective expected utility) as well as nonexpected utility theory, noncooperative game theory, and arbitrage theory. It will survey the classic literature in the field and discuss the interconnections among its branches; dissect a variety of paradoxes, puzzles, and pathologies; and discuss recent advances and controversies. The goal of

this seminar is to equip students with an understanding of both the power and the limits of rational choice theory, so that they can construct as well as critically analyze rational choice applications in a wide variety of social science contexts. It will also suggest some new directions for choice-theoretic research that involve a synthesis of ideas from competing paradigms.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA503 CHOICE THEORY

BA915 - Stochastic Models

Course Description
This course is an introduction to the theory of stochastic processes. The course begins with a review of probability theory and then covers Poisson processes, discrete-time Markov chains, martingales, continuous-time Markov chains, and renewal processes. The course also focuses on applications in operations research, finance, and engineering. No prior knowledge of measure theory is required. However, the focus of the course is on the mathematics and proofs are emphasized. Prerequisites: at least a one-semester calculus-based course in probability (MATH340/STAT230 or equivalent). A background in real analysis is helpful. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH742 STOCHASTIC MODELS, STA715 STOCHASTIC MODELS

BA921 - Social Psychological Perspectives on Organizational Behavior

Course Description
Covers the foundational social psychological theories and traditions that are used to understand perceptions and behavior in organizational contexts. Theories of motivation, justice, diversity and inequality, ethical reasoning, and other related topics. Research presented and discussed tends to be experimental and correlational, with a strong emphasis on thinking deeply about the ideas and the data used to support them.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA922 - Organization Seminar: A Macro Focus

Course Description
The organization and the subunits which make up the organization. Topics include: contingency theory, institutional theory, and population ecology. Theories of organization, structure, decentralization, divisionalization, functional area integration, task design, incentives and rewards, information systems, and decision rules are developed with an orientation toward their choice and design for high performance. Includes presentation of research by members of The Fuqua School of Business and other researchers.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BA923 - Micro OB: Foundations of Organization Behavior

Course Description
How do work organizations shape our thoughts, feelings, and actions, and what role do we play in shaping work organizations? The goal of this doctoral seminar is to provide a theoretical framework to answer the above question by covering the major topics within OB, exposing students to key sources in the literature, including theoretical work, reviews, and empirical studies, and engaging in discussions about the history, current status, and future of the OB field.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA924S - Meso OB

Course Description
This course examines 'meso' level organizational processes that occur at the interpersonal, group, and social network level of analysis. It complements the individual level focus of the Micro OB course. Topics include Social Networks, Organizational Learning, Power, Status, Group Decision Making, Trust, and Leadership.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA925S - Behavioral Decision Theory

Course Description
This discussion-based seminar explores the core questions of judgment and decision making (JDM) research, including: 1) understanding the psychology of decision processes, 2) assessing the degree to which decisions are accurate, and 3) evaluating methods for improving decisions. The course uses research articles to examine both theory and empirical findings. Major topic areas include: (1) judgments under uncertainty, (2) risky choice, multi-attribute choice, and intertemporal choice, (3) emotions, motivation, and individual differences in decision making, (4) group decision making, and (5) improving decisions through nudges and choice architecture.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY716S BEHAVIOR DECISION THEORY

BA931 - Accounting Seminar: Empirical

Course Description
This course focuses on empirical-archival research in accounting, emphasizing the framing of research questions, research design choices and research methods. Examples of topics covered include: the valuation relevance and stewardship roles of accounting information; valuation models; voluntary disclosure and accounting choice; earnings management; tax considerations; effects of accounting standards. Prerequisites: PhD. level courses in microeconomics and finance recommended; basic mathematics background in calculus, statistics and algebra; knowledge of financial accounting (US GAAP or IFRS).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BA932 - Accounting Seminar: Analytical

Course Description
This course focuses on the economic models underlying information economics-based theories of the usefulness of accounting information. It will discuss a variety of models addressing the role of information in financial markets, in contracting settings, as well as their applications for accounting issues. Prerequisites: PhD level courses in microeconomics, econometrics and finance, MBA level financial accounting course, and BA 931 is required; or approval by instructor on a case-by-case basis. Strong mathematics background in calculus, statistics and algebra.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BA933 - Advanced Topics in Accounting

Course Description
Introduces Accounting PhD students to topics at the forefront of the academic accounting literature. Topics include current advances and trends in both subject matter and methodological issues. The course is designed to prepare students to contribute to the academic accounting profession. Prerequisites: PhD level course in microeconomics and econometrics recommended; basic mathematics background in calculus, statistics and algebra.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BA951 - Introduction to Financial Economics - Finance I

Course Description
This course provides an introduction to major concepts and methods in financial economics. Topics covered include choice under uncertainty, consumption and portfolio choice and equilibrium in static and dynamic models, consumption and production based asset pricing models, and asset pricing with asymmetric information and heterogeneity. While its focus is on theoretical foundations, the course equally emphasizes motivational empirical evidence, as well as methodological tools for solving dynamic models and assessing their empirical implications.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA952 - Empirical Corporate Finance - Finance II

Course Description

This course is intended to introduce students to research topics in empirical corporate finance. The course is roughly divided into two parts. In the first part, we spend considerable amount of time on canonical early papers in corporate finance, most of which deal with the role of various capital market imperfections, such as taxes, moral hazard, or asymmetric information, in the determination of optimal capital structure. We also examine the empirical literature these early papers have spawned. In the second half of the course, we examine a range of current topics in empirical corporate finance and explore the tools used to address these questions. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

BA953 - Corporate Finance Theory - Finance III

Course Description

This course looks at the foundations of the theory in corporate finance. Topics covered include adverse selection, contracting and agency problems, capital structure, initial public offerings, collateral and corporate finance, bubbles and corporate financing decisions, banking and bank runs, and coordination failures. Applications in corporate finance include optimal capital structure, voting, debt regeneration, investment decisions and market valuation, executive compensation, bank runs, initial public offerings, and secondary public offerings, collateralization and securitization.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

BA954 - Asset Pricing - Finance IV

Course Description

This course covers the current body of work in asset pricing. We review the classic questions, the empirical methods to study them, open issues that constitute the ongoing research agenda, and new research directions. Topics covered in the course include: review of the basic asset pricing theory; predictability of asset returns and time-varying risk premia; linear factor models and their applications to the cross section of asset returns; dynamic models of the yield curve; the joint pricing or real bonds, nominal bonds, and equities; the role of expectations formation in asset pricing; review of current research directions.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

BA961 - Seminar in Quantitative Research in Marketing

Course Description

Research in marketing endeavors to explain consumer and firm behaviors and use these to abet managerial decision making. This course surveys quantitative research in marketing, with a focus on statistical and game-theoretic models. The goal of the course is to a) raise students' awareness of this literature and b) stimulate new research interests. By the end of the course, students should be familiar with the key issues and approaches in quantitative marketing, the strengths of these research streams, and the opportunities to extend them.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BA962 - Seminar in Consumer Behavior

Course Description
Examines the development of research in consumer behavior. Major emphasis is given to theoretical developments and empirical research, with a range of articles assigned for each topic. Topics include motivation and personality, perceptual processes, information search, choice processes, attitudes and persuasion, learning, and influence in consumer choice.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY715 SEM CONSUMER BEHAVIOR

BA964 - Experimental Design and Analysis Seminar

Course Description
Examines issues in the design and analysis of experiments. Emphasis on analysis of variance (ANOVA), starting with the basic ANOVA model and examining multiple factor designs, blocking designs, nested models, within subject designs, repeated measure designs, and analysis of covariance.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BA967 - Behavioral Research Methods

Course Description
This course is designed as a practical introduction to conducting behavioral research, with a special emphasis on experiments. In the class, we introduce the PhD students to (i) the research designs and approaches behavioral researchers utilize most frequently in their careers, (ii) explore how to collect data, (iii) work through the analyses that most modern experimental researchers will need to be fluent with, and (iv) examine best practices in reviewing and writing papers. The intent of the course is to get behavioral researchers up and running as quickly as possible in their graduate careers.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY719 BEHAVIORAL RESEARCH METHODS

BA970 - Strategy Seminar on Organizational Design

Course Description
We study the organization of the firm. The portfolio of theories covered include: transaction cost economics, evolutionary economics, the resource (knowledge) based view of the firm, contingency theory, and institutional theory. We discuss research problems related to: the boundaries of the firm (e.g. 'make' vs 'buy'); the internal division of labor (e.g. coordination across divisions); hierarchy and decision rights (e.g. centralization vs decentralization); incentive and rewards systems (e.g. process vs outcome driven performance metrics); and the interplay between the formal and informal structure of the firm.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BA971 - Economics of Technical Change and Innovation

Course Description
This course focuses on technological change, its determinants and consequences. Our objective is to understand the economic determinants and consequences of technical change. However, technical change needs to be understood in a historical context, and consequently, the readings cover both historical description and economic analysis. Though an economics course, it is designed to accommodate students from a range of disciplinary backgrounds. We will highlight the implications of the economics of technological change for the study of corporate strategy, entrepreneurship and public policy.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BA972 - Topics in Strategy

Course Description
This course provides an introduction to research on core areas of strategy. The goal of the course is twofold: First, students will get a broad overview of the literature on core theories and topics in strategy. Second, students will learn how to critically review research papers. The course covers the following topics: upper echelon theory, agency problems, transaction cost economics, resource based view, social networks, location choice, agglomeration, international strategy, innovation, and entrepreneurship.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BA981 - Revenue Management and Pricing

Course Description
This course focuses on the application of stochastic modeling and optimization to two fundamental and closely related problems: dynamic pricing, and dynamic allocation of limited resources. We will cover fundamental methods and models in dynamic pricing and revenue management, and explore related literature in operations research, statistics, and economics. The course consists of three modules: (a) dynamic capacity control, (b) dynamic pricing, and (c) demand estimation and the tradeoff between learning and earning. Open only to PhD students; MBA students require instructor consent. A background in stochastic processes, microeconomics, optimization, and dynamic programming is helpful. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA982 - Inventory Theory

Course Description
This course introduces mathematical models designed to support the management of production, distribution, and inventory, the basic physics of a supply chain. A primary concern is the control of logistics systems: Given a scenario describing supply, demand, and cost factors, what is an effective policy for controlling the system over time? Through careful formulation and analysis of a model of the system, we shall learn how to evaluate the key performance metrics of the system under a given policy, and then to compute an optimal policy. Recommended prerequisite: some familiarity with stochastic processes, optimization, and dynamic programming is essential. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA983 - Effective Academic Communication

Course Description
A course designed to help students develop skills that will prepare them for success in their academic career. This is a theory-based, skill-building course. Lectures, readings, and in-class exercises will introduce students to the concepts of effective communication in a variety of settings including the academic job market. Because professional skills develop over time, students will build proficiency through multiple assignments including collaborative and individual presentations. Students will also receive individualized coaching and have opportunities to refine conference presentations or job talks as part of this course. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

BA984 - Stochastic Comparison: Theory and Applications

Course Description
Stochastic comparison methods (also known as stochastic orders) are mathematical constructs for comparing stochastic variates and systems. They are used in diverse fields to derive structural results, bounds, and approximations. This course will survey the main concepts and techniques of univariate and multivariate stochastic orders. We will also discuss applications of these tools in operations management and related areas. Prerequisite: A course on probability or stochastic processes.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA985 - Operations Management Models

Course Description
An organization's operations consists of the processes it uses to produce, distribute, and sell goods and services. This seminar focuses on mathematical modeling of operating systems to best understand how to design, manage, and improve them. Areas of application will vary by year, will typically include models of manufacturing, retailing, services, supply chains, and social responsibility and sustainability. This course is intended for doctoral students in operations management and other related disciplines who will produce and/or consume modeling research in OM. Other students, e.g., master's, etc., may take the course only with the permission of the professor. Basic familiarity with operations research and economics is assumed. A background in game theory and inventory theory (BA 982) are useful, but not required. The course focuses more on the application of these 2 methodologies in different operational contexts than on the development of the methodologies themselves. For students who do not have a background in the relevant methodologies we will employ, we will briefly introduce them as necessary throughout the course, but this is not a substitute for formal courses on these topics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BA990 - Selected Topics in Business

Course Description
Allows the doctoral student the opportunity to study special topics in management on an occasional basis depending on the availability and interests of students and faculty. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

BA990S - Special Topics

Course Description
Special Topics Seminar.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

BA996 - Curricular Practical Training

Course Description
This course offers international students an experiential learning opportunity in a U.S. work environment. A paper will follow the practical training.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

BA998 - Independent Study

Course Description
Allows the doctoral student the opportunity to engage in study or tutorial on special topics on an individual basis under the supervision of a faculty member. Credit to be arranged. Prerequisite: doctoral program standing and consent of the director of the doctoral program and instructor.

Grading Basis
Graded

Course Typically Offered
Fall, Spring and Summer

Units

Min Units:
1

Max Units:
4

BA999 - Directed Research

Course Description
Allows the doctoral student to engage in individual research projects under the supervision of a faculty member. Credit to be arranged. Prerequisite: doctoral program standing and consent of the director of the doctoral program and instructor.

Grading Basis
Graded

Course Typically Offered
Fall, Spring and Summer

Units

Min Units:
1

Max Units:
4

BIOCHEM536 - Bioorganic Chemistry

Course Description
Basic enzymology, mechanisms of enzymatic reactions, cofactors, oxidoreductases, C1 chemistry, carbon-carbon bond formation, carboxylation/ decarboxylation, heme, pyridoxal enzymes, thiamine enzymes. Prerequisite: Chemistry 331 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
CHEM536 BIOORGANIC CHEMISTRY

BIOCHEM562 - High-Resolution Cryo-Electron Microscopy Image Analysis

Course Description
Cryo-electron microscopy (EM) is a Nobel Prize winning technique to determine the structure of proteins and protein complexes at molecular resolution. Computational imaging aspects of cryo-EM, including image enhancement, reconstruction, classification and burst movie processing used to determine the high-resolution structure of proteins in 3D. Overview of the structure determination pipeline, focusing primarily on the data analysis aspects of the technique including the application of machine learning and deep learning strategies to extract atomic resolution information from millions of noisy images of proteins. Recommended prerequisite: Programming experience.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI562 CRYO-EM IMAGE ANALYSIS, CBB562 CRYO-EM IMAGE ANALYSIS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

BIOCHEM593 - Research Independent Study

Course Description
Individual research in a field of special interest, under the supervision of a faculty member, the major product of which is a substantive paper or written report containing significant analysis and interpretation of a previously approved topic. Designed for students interested in either a laboratory or a library project in biochemistry.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
12

BIOCHEM631 - Contemporary Topics in Membrane Biology

Course Description
This course will highlight modern topics regarding biological membranes and membrane proteins that are important for human physiology and disease. Topics include structure and dynamics of biological membranes, structure and function of membrane proteins that play critical roles in cell signaling, diseases related to dysfunction of membrane and membrane proteins, and current efforts on drug discovery. Major techniques used in membrane research will also be covered. The format will be a combination of lectures and discussion of primary literature. Students will be evaluated based on their class participation and performance at the final presentations. Reserved for graduate students; open to undergraduate students by instructor permission.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
CMB631 MEMBRANE BIOLOGY, NEUROBIO631 MEMBRANE BIOLOGY, PHARM631 MEMBRANE BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM658 - Structural Biochemistry I

Course Description
Principles of modern structural biology. Protein-nucleic acid recognition, enzymatic reactions, viruses, immunoglobulins, signal transduction, and structure-based drug design described in terms of the atomic properties of biological macromolecules. Discussion of methods of structure determination with particular emphasis on macromolecular X-ray crystallography NMR methods, homology modeling, and bioinformatics. Students use molecular graphics tutorials and Internet databases to view and analyze structures. Prerequisites: organic chemistry and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
CMB658 STRUCTURAL BIOCHEMISTRY I, CELLBIO658 STRUCTURAL BIOCHEMISTRY I, UPGEN658 STRUCTURAL BIOCHEMISTRY I, SBB658 STRUCTURAL BIOCHEMISTRY I, CBB658 STRUCTURAL BIOCHEMISTRY I

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM659 - Structural Biochemistry II

Course Description
Continuation of Biochemistry 658. Structure/function analysis of proteins as enzymes, multiple ligand binding, protein folding and stability, allostery, protein-protein interactions. Prerequisites: Biochemistry 658, organic chemistry, physical chemistry, and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
CELLBIO659 STRUCTURAL BIOCHEMISTRY II, CBB659 STRUCTURAL BIOCHEMISTRY II, SBB659 STRUCTURAL BIOCHEMISTRY II, UPGEN659 STRUCTURAL BIOCHEMISTRY II

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM668 - RNA Biology: Co-Transcriptional and Post-Transcriptional Control of Gene Expression

Course Description
Explores various aspects of RNA biology and function. Topics will include splicing, translation, RNA: Protein interactions, non-coding RNAs, RNA modifications, viral RNA regulation, RNA structure-function relationships, and RNA-targeted drug discovery. Students will also learn about the major techniques used in RNA research, including in vitro and in vivo methods for understanding global RNA regulation. The format will be a combination of weekly lectures which will also include discussion of primary literature. Students will be evaluated based on their participation and performance during in-class presentations. Students will also write a short mock research grant on a topic of their choosing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CELLBIO668 RNA BIOLOGY, UPGEN668 RNA BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM681 - Biophysical Methods

Course Description
This course provides an overview of nine prominent methods used in biochemistry, cell biology and structural biology. They are: optical spectroscopy, fluorescence, light microscopy, ligand binding, kinetics, mass spectrometry, magnetic resonance, electrophysiology and cryoelectron microscopy. The goal is to provide students with sufficient background knowledge to allow them to read and understand papers in the primary literature that employ one or more of these methods. Each method is taught by an instructor who employs the method in their own research. Grade is based on problem sets, quizzes and a final presentation to the class of a paper that uses a method of the student's choice.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM690 - Advanced Topics in Biochemistry

Course Description
Topics and instructors announced each semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOCHEM695 - Understanding NMR Spectroscopy

Course Description
Course aimed at graduate students who have some familiarity with high-resolution NMR who wish to deepen their understanding of how NMR experiments actually 'work'. Introduces quantum mechanical tools needed to understand pulse sequences, with emphasis on obtaining good understanding of how experiments actually work. Course also covers advanced biomolecular NMR experiments that enable structural and dynamic characterization of biomolecules. For roughly half of course, students will be expected to follow online lectures that accompany course textbook, with class meetings emphasizing concepts, group discussion, and problem solving. Prerequisites: undergraduate physical chemistry, undergraduate biochemistry, and one year of calculus.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM696 - Macromolecular Structure Determination by X-Ray Crystallography: Principles and Practice

Course Description
Theoretical and practical principles of macromolecular X-ray crystallography. Topics covered include crystal symmetry, space group theory and determination, diffraction theory, a practical understanding of crystallization, X-ray intensity data collection and data processing, phase determination, refinement and model validation. Prerequisites: Undergraduate physical chemistry; undergraduate biochemistry; at least one year of calculus. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BIOCHEM700 - Graduate Training Internship

Course Description
Designed to allow graduate students in biochemistry to engage in internship lab work and doctoral study with external agencies and institutions for credit. Laboratory work and analysis can be conducted at external agency or institution with consent of the student's advisor and the director of graduate studies. May be repeated with consent of student's advisor and the director of graduate studies.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

BIOCHEM745S - Biochemistry Seminar

Course Description
Required of all first, second & third year biochemistry graduate students. Student-presented papers/research. The primary goal of this course is for students to learn how to present the background, data, conclusions and future prospects of their research clearly and concisely. Each second and third year student is required to present a seminar annually (in the fall or spring term), with students providing peer evaluations of each presenter.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

BIOCHEM746S - Biochemistry Seminar

Course Description
Required of all first-, second- & third-year biochemistry graduate students. Student presented papers/research. The primary goal of this course is for students to learn how to present the background, data, conclusions and future prospects of their research clearly and concisely. Each second- and third-year student is required to present a seminar annually (in the fall or spring term), with students providing peer evaluations of each presenter.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

BIOCHEM761 - Cellular Signaling Module I: GPCR Signaling and Disease

Course Description
This module will cover the basic mechanism of signal transduction through G protein coupled receptors (GPCR) and how they control a wide array of biological functions from vision to reproduction and are the largest targets of therapeutic interventions. How new concepts in our understanding of their signal transduction mechanisms is leading to the development of new and improve therapies for various disorder.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
CELLBIO761 CELLULAR SIGNALING MODULE I, MOLCAN761 CELLULAR SIGNALING MODULE I, PHARM761 CELLULAR SIGNALING MODULE I

BIOCHEM762 - Cellular Signaling Module II: Intracellular Signaling and Disease

Course Description
This module will cover how ion channels and intracellular nuclear receptors control cellular functions mediated through transcription or calcium signaling to regulate physiological processes in health and disease.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
CELLBIO762 CELLULAR SIGNALING MODULE II, MOLCAN762 CELLULAR SIGNALING MODULE II, PHARM762 CELLULAR SIGNALING MODULE II

BIOCHEM763 - Cellular Signaling Module III: Growth Factor Pathway in Development and Disease

Course Description
The focus of this module is on signaling pathways induced by extracellular factors that regulate growth, survival, and development, and their deregulation in disease including cancer. Among the pathways covered are those regulated by ligand-activated Receptor Tyrosine Kinases, Wnt/beta-catenin signaling, Notch signaling, and Hedgehog signaling.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
CELLBIO763 CELLULAR SIGNALING MODULE III, MOLCAN763 CELLULAR SIGNALING MODULE III, PHARM763 CELLULAR SIGNALING MODULE III

BIOCHEM790S - Seminar (Topics)

Course Description
Topics and instructors announced each semester. 2 units or variable.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
4

BIOETHIC502S - Communicating Science & Bioethics

Course Description
Examination of the challenges and best practices for communicating scientific and bioethical issues to the public, journalists, and policymakers. Explores historical and cultural factors that influence public understanding of and attitudes toward scientific and bioethical issues. Students will draw on communication case studies from a variety of disciplines (genetics, neuroscience, law, bioethics) and their own academic interests as a context for developing writing and speaking skills essential for clear communication of complex topics to non-specialists.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SCISOC502S COMMUNICATING SCIENCE & BIOETH

General Education Curriculum Codes
(STS) Sci, Tech, and Society

BIOETHIC510S - Science and the Media: Narrative Writing about Science, Health and Policy

Course Description
Those who write about science, health and related policy must make complex, nuanced ideas understandable to the nonscientist in ways that are engaging and entertaining, even if the topic is far outside the reader's frame of reference. Course examines different modes of science writing, the demands of each and considers different outlets for publication and their editorial parameters. Students interview practitioners of the craft. Written assignments include annotations of readings and original narratives about science and scientists. Course considers ways in which narrative writing can inform and affect policy. Prerequisites: a 200-level science course and/or permission of the instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
JAM510S SCIENCE AND THE MEDIA, PUBPOL510S SCIENCE AND THE MEDIA

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, W - (W) Writing

BIOETHIC590S - Special Topics in Bioethics

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BIOETHIC591 - Topics in Science Policy

Course Description
During this independent research study, students will analyze science policy developments across government, including executive and agency actions, as well as proposed legislation and judicial decisions. Students will regularly produce policy brief summaries that overview the policy, explain the science at issue, present relevant background information, provide context concerning endorsements and opposition, and expound upon related legislation and governmental actions. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
4

General Education Curriculum Codes
(R) Research, (STS) Sci, Tech, and Society

BIOETHIC601S - Foundations of Bioethics

Course Description
This course reviews the concepts and methods for rigorous analysis of questions and conflicts in ethical decision-making in biosciences and technology policy. We will discuss the moral theories of consequentialism, deontology, and virtue ethics as well as contemporary ethical approaches. The course will also evaluate and compare methodologies reasoned in life science and technology issues. Key concepts such as well-being, disability, moral status, freedom, and justice will also be explored. We will use these tools to think critically about classic and current issues in biosciences and emerging technology and strengthen learners' ability to articulate and justify a view about them.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

BIOETHIC602 - Research Ethics and Policy

Course Description
An examination of the relationship between the law, bioethical, and tech ethics issues, particularly in research and medical contexts. The course will explore the ways scientific and technological advances affect law and other social institutions, and, conversely, how law affects the development and use of scientific and technological knowledge. Topics include the history of human subject protections, current regulatory and statutory issues in research, and legal decisions governing informed consent, confidentiality, privacy, the philosophical principles underlying bio- and tech-ethics, and other issues. Open to students in the Applied Ethics & Policy program. Consent of instructor is required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

BIOETHIC603 - Clinical Bioethics and Health Policy

Course Description
An examination of the leading issues in bioethics, especially those that arise in the context of clinical decision-making and the doctor-patient encounter. The focus will be on the ethical dilemmas faced by medical providers, patients, and their families: how issues are analyzed, what values are considered, and how disputes are resolved. Topics will include end-of-life care; withdrawal or refusal of life-sustaining treatment; pediatric ethics; transplantation; and rationing of scarce drugs or resources. The course will use real case examples to illustrate these dilemmas and challenges. Consent of instructor is required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry

BIOETHIC605 - Contemporary Issues in Bioethics and Science Policy

Course Description
The course will focus on 'Professional and Scholarly Writing' (Fall) and 'Communicating Science and Bioethics' (Spring). In the fall, we delve into how and where we express ideas about bioethics and science policy in writing. We begin from first principles: Why do we write? What can good writing do for us? How do we know when we're done? During the semester we will write clear, thoughtful, analytic and creative pieces in bioethics and science policy. The spring course provides students with practical training in the communication of scientific research and bioethical issues to the media, policy makers, and the general public.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

BIOETHIC606 - Communicating Science Policy

Course Description
The goal of this course is to train those at the intersection of science and society on how to communicate science and technology policy beyond academia and towards diverse audiences. Students will learn about the broader context of the role of communication in science and tech policy, as well as theories that can be used to frame the social, cultural, and political project of science and tech communication. Students will be taught practical communication skills, with an emphasis on communicating for different audiences and in different formats, including op-eds, white papers, presentations and over social media. This is a project-driven class, where students will be asked to bring their own interests/projects, and taught the skills for the effective communication of these complex topics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOETHIC675L - Law and Policy Lab: Data Governance

Course Description
Data-savvy lawyers and practitioners must be able to work across disciplines, solve modern problems, and steward organizations of all stripes through digital issues. This course focuses on digital governance: how organizations and communities make decisions about data, code, their missions, and their membership, and how those decisions can break down or reinforce systems of structural exclusion.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
2

Max Units:
2

BIOETHIC676 - Science, Technology, Ethics and Leadership

Course Description
This interdisciplinary course is built both for technologists who want to understand science and technology's impact on law, society, organizations, and ethics, and for students from business, policy, economics, law, and liberal arts backgrounds who want to deeply understand how we can shape emerging science and technology to reflect our values. Students will engage in real world projects for external problem sponsors, gain experience and make an impact on the future of technology, science and society. By collaborating across disciplines, you'll learn to navigate the intersection of technology, science and ethics, crafting innovative solutions that are aligned with societal values.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOETHIC700 - Research Independent Study in Bioethics and Science Policy

Course Description
Individual research in a bioethics and science policy topic of special interest, under the supervision of a faculty member, the major product of which is a substantive paper or written report containing analysis and interpretation of a previously approved topic. Requires consent of supervising instructor and Director of Graduate Studies.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

BIOETHIC701 - FDA Law and Policy

Course Description
Introduction to basic principles of food and drug laws and examination of how significant doctrines of constitutional, administrative, and criminal law have been elaborated and applied in the food and drug context. The United States Food and Drug Administration has a pervasive role in American society: it is often said that the agency regulates products accounting for twenty-five cents of every dollar spent by consumers. Exploration of the complex interplay of legal, ethical, policy, scientific, and political considerations that underlie the FDA's regulatory authority, its policy-making, and its enforcement activity.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOETHIC702 - Science Communication for Scientists

Course Description
This course provides students in the sciences with practical training in the communication of scientific research to non-scientists, and helps them develop skills essential to doing meaningful outreach. Topics covered include the empirical benefits of communicating science; development of speaking, writing, and storytelling practices for diverse audiences; answering difficult, controversial, and critical questions from the media; and tweeting, blogging, and presenting research to engage non-scientists (including the lay public and policy-makers).

Grading Basis
Credit / No Credit

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
SCISOC702 COMMUNICATION FOR SCIENTISTS

BIOETHIC703 - Frontier AI & Robotics: Law and Ethics

Course Description
Robots, with us for several generations already, were long confined to narrow uses and trained users, assembling our vehicles and moving our products behind the scenes. In recent years, robotic tools have begun to step out of the back room and take center stage. Are we ready? Probably not. Surely our legal systems and ethical frameworks must evolve. We must find ways to ensure that human-robot interactions occur in ways that are safe and are consistent with our cultural values. We must take care that our policies and laws provide the direction we need without quashing or hindering the innovations that could improve our lives. The course will bring together three core areas: (1) law, (2) ethics/science policy, and (3) applied technology/ science.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOETHIC704 - Science Law and Policy

Course Description
How is science regulated? States, federal government and international agencies all set policy. How do disparate regulations impact research and translation? Class is a mix of law, ethics and science students; learning a common language an important element of the course. Classes include analysis of cases studies. No prerequisites. Training in sciences not required. MA, PhD and JD/MA students register in BIOETHIC 704 – consent of professor required. Law students (other than JD/MAs) register in LAW 333.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL841 SCIENCE LAW AND POLICY

BIOETHIC705 - Capstone: Bioethics & Science Policy

Course Description
In the Bioethics & Science Policy Capstone, students will complete either (1) a research project on a subject of interest in bioethics, including the history and analysis of relevant current issues, or (2) a practicum, with a written report analyzing the experience and integrating concepts learned in the program. Through their work, students will demonstrate that they have acquired extensive knowledge of current thinking in bioethics; collected, synthesized, reported, and critically reflected on these issues; and developed competence in scholarly writing and procedures. Consent of the director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
9

BIOETHIC706 - Science Regulation Lab

Course Description
SciReg Lab covers the use of emerging science and technology in regulatory agencies through the drafting and submission of comments to federal rule-makings. Comments provide agencies with unbiased, current, accurate and coherent information about science underlying the proposed rule. Cross-listed in Law and Graduate School, students will work in interdisciplinary teams. Course topics include overview of notice-and-comment rulemaking, translating scientific information into the language of courts and agencies, the ethical issues presented by this process, tracking pending rulemakings and select proceedings in which to file a comment. A background is science is recommended, but not required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

BIOLOGY505 - Functional Ecology of Plants

Course Description
This course is designed for graduate and undergraduate students with interest in plant functional ecology. We explore how (woody) plants function and respond to changing climate. We focus on plant functional traits (e.g., leaf properties, wood density, maximum height) and the main tradeoffs controlling plant form and function in various environments.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON505 FUNCTIONAL ECOLOGY OF PLANTS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY505D - Functional Ecology of Plants

Course Description
This course is designed for graduate and undergraduate students with interest in plant functional ecology. We explore how (woody) plants function and respond to changing climate. We focus on plant functional traits (e.g., leaf properties, wood density, maximum height) and the main tradeoffs controlling plant form and function in various environments.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON505D FUNCTIONAL ECOLOGY OF PLANTS

General Education Curriculum Codes
(NS) Natural Sciences

BIOLOGY512S - Weird Model Organisms in Today's Evolutionary Cell Biology

Course Description
How and why are new organisms being developed as emerging models in cell biology? Through lectures and reading primary literature, we'll learn how traditional model organisms (E. coli, yeast, fruit flies, mice, etc.) were originally developed and how 'weird' organisms from across the Tree of Life are used to address questions ranging from human health to climate change. Guest speakers, early-stage biologists from various fields (e.g., academia, industry, government agency) and backgrounds, will share with us how their choice of model organisms impacted their research and career. Develop skills in critical reading, scientific presentation, discussion, and developing research proposals.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMB512S WEIRD ORGANISMS IN CELL BIOL

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY515 - Principles of Immunology

Course Description
An introduction to the molecular and cellular basis of the immune response. Topics include anatomy of the lymphoid system, lymphocyte biology, antigen-antibody interactions, humoral and cellular effector mechanisms, and control of immune responses. Recommended prerequisite: Biology 220, 201L, or 203L.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
IMMUNOL544 PRINCIPLES OF IMMUNOLOGY

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences

BIOLOGY516S - Life's Purpose

Course Description
When we ask, 'Is there a purpose to my life,' is that the same as asking about purpose to all life? Do bacteria have purposes? Is there purpose in the universe writ large? These are questions about teleology. In this course, we consider what teleology is, how it works in organisms (& other systems, like self-driving cars). Historical investigation from Aristotle to Darwin and modern texts. Examines how teleology has influenced biology, how advances in biology have affected teleological thinking in areas from metaphysics to ethics, and implications for purposes in our own lives. Recommended prerequisite: college-level biology or philosophy course or instructor consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL516S LIFE'S PURPOSE

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

BIOLOGY518S - Natural Neurotoxins: Biology, Physiology and Toxicology

Course Description
Introduction of natural neurotoxins that target ion channels and receptors. Topics include the origin and nature of neurotoxins; physiological and molecular bases of toxin action and selectivity; neurotoxins as tools and resources for nociceptive pain research. Prerequisites: Biology 201.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI518S NATURAL NEUROTOXINS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY520S - Membraneless organelles in cellular processes and neurodegeneration

Course Description
Cells organize some components through the formation of membraneless compartments. These compartments positively drive distinct cell functions; however, they can also go awry to create issues in the cell, underlying multiple neurodegenerative disorders (Alzheimer's, ALS, Parkinson's). Biopolymer physics can be used to explain formation of these membraneless compartments, which form via intracellular phase separation. We integrate information from physics and cell biology to understand this relationship and will learn from a combination of readings (primary literature), lectures, and discussions with the authors of recent literature. Prerequisites: Biology 201L and recommended Biology 220.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

BIOLOGY522S - Origins of Cellular Life on Earth and Beyond

Course Description

This course discusses the origins of cellular life on Earth and beyond. We will ask: How did life originate? What are the limits of conditions that sustain life? Is there life elsewhere in the universe? How would we know life if we found it elsewhere (i.e., how is life defined)? This discussion-based course will delve into the literature reporting the biological and astrobiological research community's response to life's 'big questions.' Recommended prerequisite: Biology 201L or 203L, Chemistry 201DL, and Biology 212L.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY525S - Proteomics Methods in Life Sciences

Course Description

Proteins are the main molecular effectors driving cellular physiology. Cells differ in the nature of proteins being expressed, in their function, location, modifications, and fate. Thus, new technologies have been developed to study the cellular proteome in the omics era. Bio525S will provide an overview of current proteomics methods used to analyze and evaluate the complexity of the cellular proteome. This overview will be centered on discussing primary literature that employs a variety of mass spectrometry-based methods to understand protein dynamics. Recommended prerequisite Biology 201L or the equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMB525S PROTEOMICS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY531S - Interplay Between Plants and Climate Change

Course Description

Overview of ongoing research to understand the impact of climate change on plant growth and development and to highlight how contemporary plant research can be a solution to reducing the impact of climate change. Topics include plant growth and development, climate impact on plant life, plant stress signaling, plant immune system, natural variations in stress resilience, CRISPR de novo domestication, and plant microbiome. Recommended Prerequisites: Biology 201 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY540L - Mycology

Course Description

Survey of the major groups of fungi with emphasis on life history and systematics. Field and laboratory exercises.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY546LS - Biology of Mammals

Course Description

Lab-based version of Biology 546S.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

4

Max Units:

4

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY546S - Biology of Mammals

Course Description

The biology of mammals: diversity, evolutionary history, morphology, and aspects of physiology and ecology. Local field trips. Recommended prerequisite: Biology 20, 21, 202L, or 203L, or equivalent.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY555S - Problems in the Philosophy of Biology

Course Description

Selected topics, with emphasis on evolutionary biology: the structure of evolutionary theory, adaptation, teleological or teleonomic explanations in biology, reductionism and organicism, the units of selection, and sociobiology. Consent of instructor required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
PHIL634S PHILOSOPHY OF BIOLOGY

BIOLOGY556L - Systematic Biology

Course Description
Laboratory version of Biology 556. Theory and practice of identification, species discovery, phylogeny reconstruction, classification, and nomenclature. Recommended prerequisite: Biology 202L or 203L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NS - (NS) Natural Sciences

BIOLOGY557L - Microbial Ecology and Evolution

Course Description
Survey of new advances in the field of environmental and evolutionary microbiology, based on current literature, discussion, and laboratory exercises. Topics to include bacterial phylogeny, molecular ecology, emerging infectious diseases, bacterial symbiosis, experimental evolution, evolution of drug resistance, and microbial genomics. Recommended prerequisite: Biology 20, 21, 212L, 201L, 202L, or 203L.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY561 - Tropical Ecology

Course Description
Ecosystem, community, and population ecology of tropical plants and animals with application to conservation and sustainable development. Prerequisite: a course in general ecology.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON517 TROPICAL ECOLOGY

General Education Curriculum Codes
(NS) Natural Sciences

BIOLOGY561D - Tropical Ecology

Course Description
Ecosystem, community, and population ecology of tropical plants and animals with application to conservation and sustainable development. Prerequisite: a course in general ecology.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON517D TROPICAL ECOLOGY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

BIOLOGY564 - Biogeochemistry

Course Description
Processes controlling the circulation of carbon and biochemical elements in natural ecosystems and at the global level, with emphasis on soil and surficial processes. Topics include human impact on and social consequences of greenhouse gases, ozone, and heavy metals in the environment. Prerequisite: Chemistry 101DL or equivalent; Recommended: Chemistry 210DL.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON564 BIOGEOCHEMISTRY

BIOLOGY564D - Biogeochemistry

Course Description
Discussion version of Biology 564. Processes controlling the circulation of carbon and biochemical elements in natural ecosystems and at the global level, with emphasis on soil and surficial processes. Topics include human impact on and social consequences of greenhouse gases, ozone, and heavy metals in the environment. Recommended prerequisite: Chemistry 101DL and 210DL.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON564D BIOGEOCHEMISTRY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

BIOLOGY565L - Biodiversity Science and Application

Course Description
Processes responsible for natural biodiversity from populations to the globe. Topics include species interactions (e.g., competition, predation, parasitism), natural and human disturbance, climate change, and implications for management and conservation. Lab section involving observation and data from large-scale manipulations, such as experimental hurricanes, fire, and herbivore exclosures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON575L BIODIVERSITY SCI AND APP

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences

BIOLOGY565S - Biodiversity Science and Application

Course Description
Non-lab version of Biology 565L. Processes responsible for natural biodiversity from populations to the globe. Topics include species interactions (e.g., competition, predation, parasitism), natural and human disturbance, climate change, and implications for management and conservation. Recommended prerequisite: Biology 209D-2 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON575S BIODIVERSITY SCI AND APP

General Education Curriculum Codes
NS - (NS) Natural Sciences

BIOLOGY566S - Understanding the Ecological Role of Plant Traits in Changing Environments

Course Description
Ecophysiology studies the adaptation of organism's physiology to its environment and provides a mechanistic framework for understanding how species respond to changing environments and how species interact with each other. As such, it plays a central role in understanding how organisms might respond to global change. This course will explore current topics in plant ecology by reading and discussing recent papers from the scientific literature. Recommended prerequisite: previous coursework in either ecology or physiology.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences

BIOLOGY571A - Sojourn in Singapore: Urban Tropical Ecology

Course Description
The mix of human ecology, tropical diversity, disturbed habitats and invasive species in Singapore. How Singapore maintains and enhances the quality of life of its citizens while radically modifying its environment. Research on politics, management or biology. Travel to Singapore required. Taught in Beaufort at Duke Marine Lab. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON571A URBAN TROPICAL ECOLOGY, MARSCI571A URBAN TROPICAL ECOLOGY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

BIOLOGY588S - Macroevolution

Course Description
Evolutionary patterns and processes at and above the species level; species concepts, speciation, diversification, extinction, ontogeny and phylogeny, rates of evolution, and alternative explanations for adaptation and evolutionary trends. Recommended prerequisite: Biology 202L, 203L, or equivalent. Also recommended: one course in plant or animal diversity.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EVANTH588S MACROEVOLUTION

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY590 - Topics in Biology

Course Description
Lecture course on selected topic. Offerings vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BIOLOGY590S - Seminar (Topics)

Course Description
Seminar on a selected Topic. Offerings vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BIOLOGY623 - Ecological Diversity and Climate Change

Course Description
Evaluates the science of biodiversity and climate change, including changes happening now, in the past, and what we can expect in the future. Topics include forest diebacks, intensifying drought, increased wildfire, insect and pathogen outbreaks, and poleward migrations of land and marine populations. Analytical tools used to quantify change include elements of basic distribution theory, data manipulation in R, and examples of simulation methods. Course includes required travel. Prerequisites: calculus, statistics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON623 ECOL DIVRSTY & CLIMATE CHNGE

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

BIOLOGY652S - The Life and Work of Darwin

Course Description
Readings by and about Darwin and his contemporaries, especially Wallace. Darwin's 'Autobiography' and Janet Browne's biography as context for readings of some of his major works and works of his contemporaries. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EVANTH652S THE LIFE AND WORK OF DARWIN

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY660 - Evolution from a Coalescence Perspective

Course Description
Survey of theoretical and empirical aspects of modern population genetics in the post-coalescence era. Coincident with the development of coalescence theory, evolutionary biology began a profound and pervasive transformation. This course presents the basics of coalescence theory. It builds upon this perspective to address an array of summary statistics and inference methods developed for the analysis of genomic data.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
UPGEN660 COALESCENCE AND EVOLUTION

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY665 - Bayesian Inference for Environmental Models

Course Description
Formulation of environmental models and applications to data using R. Distribution theory, algorithms, and implementation. Topics include physiology, population growth, species interactions, disturbance, and ecosystem dynamics. Discussions focus on classical and current primary literature.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON665 BAYESIAN INFERENCE ENV MODELS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

BIOLOGY668 - Population Ecology

Course Description
Key questions in population ecology from a theoretical perspective. Topics include demography and dynamics of structured populations, population regulation, stochastic and spatial population dynamics, life history characteristics, species interactions, and conservation of threatened populations. Computer labs will emphasize fitting models to data. Prerequisites: One course in Ecology.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

BIOLOGY701 - Succeeding in Graduate School in the Biological Sciences

Course Description
Weekly lecture presentation on choosing a thesis advisor, the grant proposal and scientific manuscript peer review processes, and other topics related to succeeding in graduate school.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

Crosslisted Courses
UPGEN711 GRADUATE SCHOOL 101, EVANTH705 GRADUATE SCHOOL 101

BIOLOGY702 - Succeeding Beyond Grad School: Career Options with a PhD in the Biological Sciences

Course Description

Weekly lecture presentation on preparing academic job applications, alternative careers in the biological sciences and other topics related to succeeding beyond graduate school.

Grading Basis

Credit / No Credit

Units

Min Units:

0.5

Max Units:

0.5

Crosslisted Courses

UPGEN712 SUCCEEDING BEYOND GRAD SCHOOL, EVANTH706 SUCCEEDING BEYOND GRAD SCHOOL

BIOLOGY703 - Professional Development for Careers in Biology

Course Description

Presentations and activities for Biology PhDs to assist in matching students' skills, interests, and values to their future careers, in or outside the academy. First half of the course focuses on identifying students' career goals, recognizing existing skills, discussing interpersonal dynamics, and learning how to obtain new skills necessary to achieve students' goals. Second half explores contemporary issues like work/life balance and women in science, and will offer students the opportunity to create and peer-edit job application materials.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

BIOLOGY704LA - Biological Oceanography

Course Description

Patterns of abundance, diversity and activity of organisms in major ocean ecosystems. Identifies major physical, chemical and ecological processes that affect these patterns, and analyzes the impact of biology on ecosystems. Uses 'flipped' classroom emphasizing hands-on data collection and quantitative analyses, field trips aboard DUML research vessels, and participatory activities to demonstrate core concepts in biological oceanography. Taught in Beaufort at Duke Marine Lab. Spring enrollment requires travel. Graduate section includes experimental design component and research paper on final project.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

4

Max Units:

4

Crosslisted Courses

ENVIRON704LA BIOLOGICAL OCEANOGRAPHY, ECS704LA BIOLOGICAL OCEANOGRAPHY

BIOLOGY705S - Teaching Biology: Theory and Practice

Course Description
Teaching is a major responsibility for many academics, yet pedagogy is often not a standard part of graduate training. In this seminar, participants work collaboratively to understand the fundamental features of designing and teaching college-level science courses. Through readings, observations, discussions, and hands-on activities, students explore the fundamentals of teaching and learning. By the end of the semester, students will have developed and implemented a teaching module, drafted a teaching philosophy and DEI statement, and explored the landscape of teaching-related career opportunities.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

BIOLOGY706 - Grant Writing

Course Description
Hands-on instruction for preparing grant proposals; preparation and revision of an NSF-format proposal; evaluation and critique of proposals prepared by fellow class members.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BIOLOGY708S - Writing and Publishing in Science

Course Description
Effective writing is essential for the communication of scientific knowledge, yet few biologists have any formal training in how to write a scientific paper. This course teaches students how to become more effective writers by demystifying the writing process. We will work throughout the semester on students' writing, reviewing and critiquing each other's writing in class, in small peer groups, and in one-on-one consultations. We will revise each paper several times before the final drafts are completed. By the end of the semester, students will have a better understanding of the conventions of science writing and of readers' expectations. Additionally, students will learn to solicit high-quality feedback and to respond to feedback in thoughtful and deliberate ways when revising.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BIOLOGY711S - Ecology Seminar

Course Description
Presentation of current research by invited speakers, faculty, and students in the University Graduate Program in Ecology.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
UPE703S ECOLOGY SEMINAR, ENVIRON702S ECOLOGY SEMINAR, EVANTH743S ECOLOGY SEMINAR

BIOLOGY712S - Ecology, Evolution, and Organismal Biology Seminar

Course Description
Weekly presentation of current research in ecology, evolution, and organismal biology by students, faculty, and invited speakers.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

BIOLOGY718S - Developmental, Cellular, and Molecular Biology Seminar

Course Description
Weekly presentations in developmental, cellular, and molecular biology topics by students, faculty, and invited speakers. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

BIOLOGY723 - Statistical Computing for Biologists

Course Description
Statistical computing for the biological sciences with an emphasis on common multivariate statistical methods and techniques for exploratory data analysis. Goal of the course is to help graduate students in the biological sciences develop practical insights into methods they are likely to encounter in their research. Provides introductions to 'R' statistical computing environment and Python programming language.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BIOLOGY732 - Food Web Theory

Course Description
This class covers the fundamentals of Food Web Theory and their connections to modern takes on the discipline while also having a component of mathematical modeling, coding (in R and Mathematica), paper discussions, and visits from prominent Food Web Ecologists.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EVANTH732 FOOD WEB THEORY, ENVIRON743 FOOD WEB THEORY, UPE732 FOOD WEB THEORY

BIOLOGY733S - The Biology Nobels

Course Description

The Biology Nobels is a seminar course designed to students on a deep dive into the cellular and molecular biology related to that research whose excellence was recognized by a Nobel Prize in Chemistry, Physics or Physiology or Medicine and is related to modern research in biology. Students will read, discuss, and present papers by the Laureates and related material that provides background or additional information about each field. Graduate section offered in conjunction with undergraduate course. Graduate students will also investigate a Laureate of their choice through a short research paper and create a variety of instructional materials to teach about this individual's work.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

BIOLOGY750S - Introduction to Inclusion, Diversity, Equity, and Anti-Racism in Biology

Course Description

This half-credit course is designed for graduate students in biology with an interest in inclusion, diversity, equity, and anti-racist (IDEA) efforts in science. We will explore the history of racism and oppression in biology and interrogate the epistemic values and assumptions embedded in the field and its subfields. We will discuss current events related to IDEA topics in biology along with ongoing efforts in universities towards inclusion, equity, diversity, and antiracism. Finally, we will consider how biologists can promote diversity, equity, and inclusion in ways that complement their research.

Grading Basis

Credit / No Credit

Course Typically Offered

Spring Only

Units

Min Units:

1.5

Max Units:

1.5

BIOLOGY773A - Marine Ecology

Course Description

Ecology from a policy and management perspective. Recitations and discussions target a policy- and management-oriented graduate audience. Lecture topics include factors that influence the distribution, abundance and diversity of marine organisms, characteristics of marine habitats, adaptation to environment, species interactions, biogeography, larval recruitment, and communities found in rocky shore, tidal flats, beached, mangrove, coral reefs and subtidal areas. Recitations and discussions cover ecological principles form a policy and management perspective. Not open to students who have taken Biology 273LA and not open to undergraduates. Taught in Beaufort at Duke Marine Lab. Recommended prerequisite: introductory biology.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

4

Max Units:

4

Crosslisted Courses

ENVIRON773A MARINE ECOLOGY

BIOLOGY773L - Marine Ecology

Course Description
Factors that influence the distribution, abundance, and diversity of marine organisms. Course structure integrates lectures, field excursions, lab exercises and an independent project. Lecture topics include physical characteristics of marine systems, adaptation to environment, species interactions, biogeography, larval recruitment, and biodiversity and conservation of communities found in rocky shores, tidal flats, beaches, marshes, mangrove, coral reefs, and subtidal areas. Taught fall, spring, and summer. (Spring enrollment requires travel to Caribbean.) Graduate students submit literature review. Recommended prerequisite: introductory biology.

Grading Basis
Graded

Course Typically Offered
Fall, Spring and Summer

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON773L MARINE ECOLOGY

BIOLOGY773LA - Marine Ecology

Course Description
Factors that influence the distribution, abundance, and diversity of marine organisms. Course structure integrates lectures, field excursions, lab exercises and an independent project. Lecture topics include physical characteristics of marine systems, adaptation to environment, species interactions, biogeography, larval recruitment, and biodiversity and conservation of communities found in rocky shores, tidal flats, beaches, marshes, mangrove, coral reefs, and subtidal areas. Not open to students who have taken Biology 273LA. Taught in Beaufort at Duke Marine Lab. Taught fall, spring, and summer. Grad students submit literature review. Prerequisite: introductory biology.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON773LA MARINE ECOLOGY

BIOLOGY777LA - Biodiversity of Marine Invertebrates

Course Description
An introduction to the biodiversity represented by major marine invertebrate groups, with emphasis on the diversity of body forms and behaviors and on anatomical structures and functions. Field trips primarily by boat allow students to explore invertebrates characteristic of a variety of coastal habitats in North Carolina, including mud flats, sandy beaches, salt marshes, oyster reefs, piers and docks, and the water column. Live invertebrates maintained in the laboratory serve as models for detailed study of form and function. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON788LA BIODIVERSITY OF MARINE INVERTS

BIOLOGY778L - Comparative Physiology of Marine Animals

Course Description
Physiology of marine animals with emphasis on comparisons between marine vertebrates and humans. Focus on physiological processes including gas exchange, circulation, osmoregulation, metabolism, thermoregulation, endocrine, neural control and sensory systems. Lectures and laboratories illustrate the methodology, analysis techniques, and written reporting of physiological research. Open to undergraduates as Biology or Environment 278L.

Grading Basis
Graded

Course Typically Offered
Fall, Spring and Summer

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON778L COMP PHYSIOL MARINE ANIMALS

BIOLOGY778LA - Comparative Physiology of Marine Animals

Course Description
Physiology of marine animals with emphasis on comparisons between marine vertebrates and humans. Focus on physiological processes including gas exchange, circulation, osmoregulation, metabolism, thermoregulation, endocrine, neural control and sensory systems. Lectures and laboratories illustrate the methodology, analysis techniques, and written reporting of physiological research. Open to undergraduates only under Biology or Environment 278LA. Four units (fall, spring); six units (summer). Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Fall, Spring and Summer

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON778LA COMP PHYSIOL MARINE ANIMALS

BIOLOGY784LA - Sound in the Sea: Introduction to Marine Bioacoustics

Course Description
Fundamentals marine bioacoustics with focus on current literature and conservation issues. Topics include: intro acoustics; acoustic analysis methods and quantitative tools; production/recording of sound; ocean noise; propagation theory; active/passive acoustics; hearing, sound production and communication in marine organisms, potential impacts of anthropogenic noise; and regulation of marine sound. Lab focus on methodologies for generating, recording and analyzing marine sounds. Grad students responsible for additional acoustic analyses and results prep for student projects plus preparation additional lit review/critique. Taught in Beaufort at Duke Marine Lab. Prerequisite: AP or introductory biology or consent; Physics 41L or 161L (or equivalent) or consent.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON784LA MARINE BIOACOUSTICS, ECE784LA MARINE BIOACOUSTICS

BIOLOGY790 - Topics in Biology

Course Description
Lecture course on selected topic. Offerings vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

BIOLOGY790S - Special Topics Seminar

Course Description
Seminar on a selected topic. Offerings vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

BIOLOGY791T - Tutorial

Course Description
Carried out under the direction of the appropriate staff members. Consent of instructor required. Hours and credit to be arranged.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
12

BIOLOGY792 - Research

Course Description
To be carried on under the direction of the appropriate staff members. Consent of instructor required. Hours and credit to be arranged.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
12

BIOLOGY792A - Research

Course Description
To be carried out under the direction of the appropriate faculty members. Consent of instructor required. Hours and credit to be arranged. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
12

BIOLOGY799 - Internship

Course Description

Open to students engaging in practical or governmental work experiences during the summer or regular semester. A faculty member in the department will supervise a program of study related to the work experience, including a substantive paper on a biology-related topic that involves significant analysis and interpretation. Consent of the Director of Graduate Studies required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

BIOLOGY841 - Ecological Perspectives: Evolution to Ecosystems

Course Description

This course surveys core concepts in evolutionary and ecosystems ecology, and it challenges students to develop intersections and creative syntheses across those disciplines.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

4

Max Units:

4

Crosslisted Courses

UPE701 EVOLUTION TO ECOSYSTEMS, ENVIRON841 EVOLUTION TO ECOSYSTEMS, EVANTH741 EVOLUTION TO ECOSYSTEMS

BIOLOGY842 - Ecological Perspectives: Individuals to Communities

Course Description

This course surveys core concepts in Physiological/Behavioral/Population Ecology and Community Ecology, and it challenges students to develop intersections and creative syntheses across those disciplines.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

4

Max Units:

4

Crosslisted Courses

UPE702 INDIVIDUALS TO COMMUNITIES, ENVIRON842 INDIVIDUALS TO COMMUNITIES, EVANTH742 INDIVIDUALS TO COMMUNITIES

BIOLOGY570LA-1 - Experimental Tropical Marine Ecology

Course Description

Distribution and density of marine and semi-terrestrial tropical invertebrate populations; behavioral and mechanical adaptations to physical stress, competition, and predation using rapid empirical approaches and hypothesis testing. Taught in Beaufort at Duke Marine Lab, with preparation for fieldwork before and analysis and presentation of projects after required one-week intensive field experience on the coast of Panama. Consent of instructor required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
MARSCI570LA-1 TROPICAL MARINE ECOLOGY

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences

BIOLOGY571A-1 - Urban SubTropical Ecology

Course Description
Domestic version of MARSCI 571A Urban Tropical Ecology. The mix of human ecology, subtropical diversity, disturbed habitats and invasive species in the Eastern US. Comparing how Asian and US planners maintain and enhance the quality of life of citizens in radically modified environments. Research on politics, management, biology and social science of land use restoration and tourism. Travel in South Eastern US to experience solutions to disturbed environments required. Domestic travel required. Instructor consent required. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MARSCI571A-1 URBAN SUBTROPICAL ECOLOGY, ENVIRON571A-1 URBAN SUBTROPICAL ECOLOGY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

BIOLOGY724D-1 - Foundations of Data Science for Biologists

Course Description
This course is the first of a two-semester sequence that provides an overview of computing and data analysis concepts and tools that are frequently used throughout the biological sciences. Topics covered include data filtering and restructuring; data visualization and effective communication; data science best practices for reproducibility, reusability, and discovery; and working effectively with big data. Students will learn how to leverage key tools from the Unix, R, and Python computing ecosystems.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BIOLOGY724D-2 - Foundations of Data Science for Biologists

Course Description
This course is the second of a two-semester sequence that provides an overview of computing and data analysis concepts and tools that are frequently used throughout the biological sciences. Topics covered include data filtering and restructuring; data visualization and effective communication; data science best practices for reproducibility, reusability, and discovery; and working effectively with big data. Students will learn how to leverage key tools from the Unix, R, and Python computing ecosystems.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BIOLOGY773LA-1 - Marine Ecology

Course Description
Factors that influence the distribution, abundance, and diversity of marine organisms. Course structure integrates lectures, field excursions, lab exercises and an independent project. Lecture topics include physical characteristics of marine systems, adaptation to environment, species interactions, biogeography, larval recruitment, and biodiversity and conservation of communities found in rocky shores, tidal flats, beaches, marshes, mangrove, coral reefs, and subtidal areas. Not open to students who have taken Biology 273LA. Taught in Beaufort at DUML. Spring enrollment requires travel. Visit DUML website for details. Grad students submit literature review. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ENVIRON773LA-1 MARINE ECOLOGY

BIOLOGY790-50 - Topics in Foundational Biology

Course Description
Introduction to biology topics for graduate students outside of Biology Department.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOSTAT900 - Current Problems in Biostatistics

Course Description
Advanced seminar on topics at the research frontiers in biostatistics. Readings of current biostatistical research and presentations by faculty and advanced students of current research in their area of specialization.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

BIOSTAT902 - Missing Data Analysis: Theory and Application

Course Description
Theory and application of missing data methodology, ad hoc methods, missing data mechanism, selection models, pattern mixture models, likelihood-based methods, multiple imputation, inverse probability weighting, sensitivity analysis. Prerequisites: Statistical Science 711, 721, and 732. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BIOSTAT903 - Advanced Survival Analysis

Course Description
Designed for PhD students in Biostatistics or DSS departments who may be interested in conducting methodological research in the area of Survival Data Analysis. Applications of counting process and martingale theory to right censored survival data. Applications of empirical process theory to more general and possibly more complex statistical models using nonparametric analysis of interval-censored data as illustrating examples. After completion, students are anticipated to understand the statistical method papers on survival analysis appearing in top tier statistical journals. Prerequisites: BIOSTAT 701, 704, and 713, or equivalent. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BIOSTAT905 - Linear Models and Inference

Course Description
Introduction to linear models and linear inference from the coordinate-free viewpoint. Topics: identifiability and estimability, key properties of and results for finite-dimensional vector spaces, linear transformations, self-adjoint transformations, spectral theorem, properties and geometry of orthogonal projectors, Cochran's theorem, estimation and inference for normal models, distributional properties of quadratic forms, minimum variance linear unbiased estimation, Gauss-Markov theorem and estimation, calculus of differentials, analysis of variance and covariance. Prerequisite: Biostatistics 906. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BIOSTAT906 - Statistical Inference

Course Description
Introduce decision theory and optimality criteria, sufficiency, methods for point estimation, confidence interval and hypothesis testing methods and theory. Prerequisite: Biostatistics 704 or equivalent. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BIOSTAT907 - Phase II Clinical Trials

Course Description
Introduction to diverse statistical design and analytical methods for randomized phase II clinical trials. Topics: Minimax, optimal, and admissible clinical trials Inference methods for phase II clinical trials; clinical trials with a survival endpoint; clinical trials with heterogeneous patient populations; and randomized phase II clinical trials. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BIOSTAT908 - Independent Study (Rotations)

Course Description
Faculty directed statistical methodology research. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BIOSTAT909 - Internship Course

Course Description
Student gains practical experience by taking an internship in industry/government and writes a report about this experience. Requires prior consent from the student's advisor and from the Director of Graduate Studies. May be repeated with consent of the advisor and the Director of Graduate Studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BIOSTAT910 - Career Development and Prep

Course Description
Students gain a holistic view of what skills they will need to be successful graduate students and academic scholars. The curriculum focuses on the unique challenges doctoral students face and the tools needed for long-term success in academia or industry.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
CBB910 CAREER DEVELOPMENT AND PREP

BIOSTAT911 - Advanced Inferential Techniques and Theory

Course Description
The theory for M- and Z- estimators and applications. Semiparametric models, geometry of efficient score functions and efficient influence functions, construction of semiparametric efficient estimators. Introduction to the bootstrap: consistency, inconsistency and remedy, correction for bias, and double bootstrap. U statistics and rank and permutation tests. Prerequisite: Statistical Science 711 and Biostatistics 906.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BIOSTAT913 - Applied Empirical Processes

Course Description
This course provides an introduction to the basic theory and application of empirical processes. Topics include: concepts of stochastic processes, Brownian motion and Brownian bridge process, stochastic integrals, weak convergence of sequences of random elements, convergence of empirical distribution functions, general Glivenko-Cantelli theorems and Donsker theorems, functional Delta method. An emphasis is put on applications in various biostatistical problems. Prerequisite: Statistical Science 711.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BIOSTAT914 - Graphical Models for Biological Data

Course Description
Introduction to probabilistic graphical models and structured prediction, with applications in genetics and genomics. Hidden Markov Models, conditional random fields, stochastic grammars, Bayesian hierarchical models, neural networks, and approaches to integrative modeling. Algorithms for exact and approximate inference. Applications in DNA/RNA analysis, phylogenetics, sequence alignment, gene expression, allelic phasing and imputation, genome/epigenome annotation, and gene regulation. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB914 GRAPHICAL MODELS, COMPSCI763 GRAPHICAL MODELS

BIOSTAT915 - High-Dimensional Statistics and Machine Learning

Course Description
The goal of this course is to provide motivated Ph.D. and master's students with background knowledge of high-dimensional statistics/machine learning for their research, especially in their methodology and theory development. Discussions cover theory, methodology, and applications. Selected topics in this course include the basics of high-dimensional statistics, matrix and tensor modeling, concentration inequality, nonconvex optimization, applications in genomics, and biomedical informatics. Knowledge in probability, inference, and basic algebra are required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA915 HIGH-DIMENSIONAL STATISTICS, COMPSCI762 HIGH-DIMENSIONAL STATISTICS

BIOSTAT916 - Career Development and Prep II

Course Description
Students gain a holistic view of career choices and how to structure a targeted job search. The curriculum focuses on exploring different career options in academia or industry, communicating unique value to employers, and organizing a job search. May be repeated with the consent of the advisor and the Director of Graduate Studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
CBB916 CAREER DEVELOPMENT AND PREP II

BIOSTAT917 - Quantitative Methods for Biomedical Studies

Course Description
Quantitative methods for analyzing biomedical data. Data generation and related domain knowledge, data visualization and pre-processing tools, scientific problem formulation and data modeling, quantitative methods selection and application, pipeline programming and coding, and result checking and visualization. The interdisciplinary approach prepares students in math, statistics, biostatistics, computer science, and engineering for careers in biomedical data science. Recommended prerequisites: Multivariate calculus, linear algebra, undergraduate-level probability, undergraduate-level statistics, and R programming.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH574 QUANT METHODS IN BIOMED, CBB575 QUANT METHODS IN BIOMED

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

BIOSTAT920 - Probability

Course Description
This course provides an introduction to measure theoretic foundations of probability theory focusing on properties of random variables, modes of convergence and their relationships, stochastic order, law of large numbers, central limit theorems, classical expectation, and concentration inequalities, and characteristic functions and conditional expectations. Students seeking a more abstract or advanced coverage of concepts introduced in this course are encouraged to register for MATH 631 (Measure and Integration) or MATH 641 (Probability).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BIOSTAT990 - Biostatistics Special Topics

Course Description
Advanced course on topics at the research frontiers in biostatistics. Readings of current biostatistical research and presentations by faculty and advanced students of current research in their area of specialization. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BIOTRAIN701 - Foundations of Professionalism for Biomedical Scientists

Course Description
This course equips first-year School of Medicine (SoM) biomedical PhD students with professionalism skills, including but not limited to stress management, effective communication, and mentor-mentee relationships. The course is team-taught by National Research Mentoring Curriculum-trained faculty members and Leadership and Management in Action Program-trained PhD students from diverse SoM PhD programs. Content includes interactive lectures that provide fundamental knowledge of key professional skills, and small group active learning sessions ('Gateway Groups') during which students discuss and practice professionalism skills and receive feedback from faculty mentors, peer mentors, and peers. Course is available for SoM biomedical PhD students in their first year.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

BIOTRAIN720 - Grant Writing for Biomedical Scientists

Course Description
Introduction to scientific grant writing for second- (or third-) year PhD students. This course contains lecture-based and active learning sessions. Content includes lectures combined with class discussions on grant agencies, format and structure of grant applications, concepts in peer review, best practices in articulating study design and data outcomes, rigor and reproducibility in a research plan, and crafting biological significance and training statements. Students write an NIH-style proposal and actively participate in topical study sections to receive oral and written critiques of their proposals and to provide constructive feedback of others' proposals. Open only to second- or third-year students in biomedical PhD programs.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BIOTRAIN730 - Data Visualization for Biomedical Sciences

Course Description
Display of quantitative data is central to relaying results in scientific manuscripts, talks, and other visual communications. Learning to manage, display, communicate scientific results effectively and ethically is an important component of professional development for all scientists. This course will offer conceptual and hands-on training in data visualization for biomedical scientists, combining principles of graphic design with a deep dive into the Adobe suite of tools. In addition to using 'out of the box' tools, the course will fully integrate coding in R and rigor and reproducibility best practices. Open only to students in School of Medicine PhD programs.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

BIOTRAIN750 - Introduction to Responsible Conduct of Research Concepts

Course Description
Responsible Conduct of Research (RCR) and Rigor and Reproducibility (R&R) training is essential to graduate biomedical research training. In this combined Orientation and RCR course, students will be introduced to fundamental concepts in RCR and learn about resources to enhance their training experience. Topics include: expectations of a graduate student; concepts in professionalism; best practices in mentoring; self-awareness and wellness; history of ethics and inherent bias; reporting professional misconduct; and diversity, inclusion, and cultural awareness. This one day on-site course offered at the start of fall semester is required for all entering first-year biomedical PhD students. Open only to first-year students in biomedical PhD programs.

Grading Basis
No Grade Associated

Course Typically Offered
Fall Only

Units

Min Units:
0

Max Units:
0

BIOTRAIN751 - The Responsible Scientist I

Course Description
This course, required for all 1st year PhD students in the School of Medicine, utilizes online lectures/modules, in-person lectures and small group discussions, and focuses on Responsible Conduct of Research (RCR) and Rigor & Reproducibility (R&R) topics for early-stage graduate students. Small group sessions centered on expanding the online/lecture material through discussion questions and case studies build community and encourage continual embedded dialogue about best practices in RCR and R&R. Small groups are led by training faculty representing each of the PhD training programs and departments, with teaching assistance from senior graduate students and postdoctoral fellows.

Grading Basis
No Grade Associated

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

BIOTRAIN753 - Data Management and Quality for Biomedical PhD Students

Course Description
Data Management and Quality for Biomedical PhD Students is offered via Duke LMS (Learning Management System). In Years 2 and 3, PhD students in the School of Medicine are required to take this course comprised of 3 online interactive modules. Each module is accompanied by an assessment. This course is presented with interactive graphics, text-based activities, short videos, and discipline specific scenarios. Data Management and Quality for Biomedical PhD Students includes 3 modules: 1) Research Quality and Reproducibility; 2) Data Management; 3) Data and Resource Sharing. This course is required for all biomedical PhD students in year 2 or 3.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

BIOTRAIN754 - The Responsible Scientist II

Course Description
This course, required for all 4th year students, utilizes online lectures/modules, in-person lectures, and small group discussions, and focuses on Responsible Conduct of Research (RCR) and Rigor & Reproducibility (R&R) topics for advanced graduate students. Small group sessions centered on expanding the online/lecture material through discussion questions and case studies build community and encourage continual embedded dialogue about best practices in RCR and R&R. Small groups are led by training faculty representing each of the PhD training programs and departments.

Grading Basis
No Grade Associated

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

BIOTRAIN755 - BIOTRAIN Teaching Assistant

Course Description
School of Medicine PhD students in years 4+ may earn BIOTRAIN 755 credit (replacing one of two required RCR Forums) by serving as a teaching assistant in BIOTRAIN 751: The Responsible Scientist I. School of Medicine PhD students in years 3+ may earn up to two semesters of BIOTRAIN 755 credit (replacing up to two of two required RCR Forums) by serving as an OBGE Graduate Student Peer Mentor over the course of one academic year, including participation in BIOTRAIN 701: Foundations in Professionalism.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

BIOTRAIN760 - Foundations for Equity in Biomedical Research

Course Description
This course equips School of Medicine (SoM) biomedical PhD students of all levels with the tools needed to transverse the academic landscape in an equitable manner. This course is team-taught by Center for the Improvement of Mentored Experiences in Research (CIMER)-trained staff members from the SOM IDEALS Office. Content includes interactive lectures that provide fundamental knowledge of key socialization theory areas and small group active learning sessions during which students, faculty, and staff will discuss and practice learning to view others through more empathetic lenses. Students will receive feedback from faculty mentors, staff mentors, and student TAs.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

BIOTRAIN898 - BIOTRAIN Gateway to Internship and Experiential Learning

Course Description
Students will explore non-academic career options in biomedical sciences and begin preparation for an internship in industry or government. The course will encourage students to plan a practical path for pursuing a career outside of academia, address the benefits and challenges of participating in an internship during the PhD, and provide tools and skills to navigate the process of finding and successfully completing an internship as part of the PhD course of study. Companion course for BIOTRAIN 899.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BIOTRAIN899 - BIOTRAIN Internship and Experiential Learning

Course Description
Student gains practical experience by taking an internship in industry or government and writes a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

BME503 - Computational Neuroengineering (GE, EL)

Course Description
This course introduces students to the fundamentals of computational modeling of neurons and neuronal circuits and the decoding of information from populations of spike trains. Topics include: integrate and fire neurons, spike response models, homogeneous and inhomogeneous Poisson processes, neural circuits, Weiner (optimal) adaptive filters, neural networks for classification, population vector coding and decoding. Programming assignments and projects will be carried out using MATLAB. Prerequisites: Biomedical Engineering 301L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI503 COMPUTATIONAL NEUROENGINEERING

BME504 - Fundamentals of Electrical Stimulation of the Nervous System (EL, GE)

Course Description
This course presents a quantitative approach to the fundamental principles, mechanisms, and techniques of electrical stimulation required for non-damaging and effective application of electrical stimulation. Consent of instructor required. Prerequisite: BME 301L or graduate standing. (EL, GE)

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI504 FUND ELEC STIM NERV SYS

BME505L - Biopotential Amplifiers and Implant Devices (GE, EL, IM)

Course Description
This course will cover fundamental principles and circuits for implantable medical devices, geared to advanced undergraduates and graduate students interested in understanding the basics of hardware design for implantable neurological devices. Specific circuit examples of low-power amplifiers and implantable devices will be discussed. A system level approach that optimizes performance, reliability and power consumption will be emphasized. In parallel, printed circuit board design and fabrication will be presented. Principles of bioinstrumentation will be reinforced through practical design exercises. Prerequisite: BME 301L or graduate standing. (EL, IM, GE).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME506 - Measurement and Control of Cardiac Electrical Events (GE, EL, IM)

Course Description
Design of biomedical devices for cardiac application based on a review of theoretical and experimental results from cardiac electrophysiology. Evaluation of the underlying cardiac events using computer simulations. Examination of electrodes, amplifiers, pacemakers, and related computer apparatus. Construction of selected examples. Prerequisites: Biomedical Engineering 301L; 354L or instructor consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME507 - Cardiovascular System Engineering, Disease and Therapy (GE, BB, EL)

Course Description
Introductory and advanced topics in anatomy, physiology, pathophysiology, and modeling of the cardiovascular system. Theoretical and bioengineering concepts of heart electrical and mechanical function and circulatory system at cellular, tissue, and organ level. Computational models of cardiac electrical and mechanical activity and pressures and volumes within circulatory system. Contemporary cell, gene, and device-based therapies for treatment of cardiac and cardiovascular disease. The course enhances students' knowledge of cardiovascular system function with the emphasis of underlying engineering principles. Prerequisites: two of Biomedical Engineering 301L, 302L, 307 or graduate standing in BME.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME510 - Bayesian Analysis in Biomedical Engineering (GE, EL)

Course Description
The application of Bayesian statistics to questions in BME broadly with a focus on electrotrocardiography. Topics include a brief history of Bayesian math in biology and medicine, use of likelihood functions and prior distributions, the Bayesian outlook toward medical diagnosis, the work of Cornfield, Pipberger, and Dunn on the classification of electrocardiograms, and a Bayesian framework for the cardiac inverse problem. The approaches used for these topics can be adapted to many other BME situations. Prerequisite: Senior or graduate standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BME512L - Cardiac Bioelectricity (GE, EL)

Course Description
Electrophysiological behavior of cardiac muscle. Emphasis on quantitative study of cardiac tissue with respect to propagation and the evaluation of sources. Effect of junctions, inhomogeneities, anisotropy, and presence of unbounded extracellular space. Bidomain models. Study of models of arrhythmia, fibrillation, and defibrillation. Electrocardiographic models and forward simulations. Laboratory exercises based on computer simulation, with emphasis on quantitative behavior and design. Readings from original literature. Prerequisite: Biomedical Engineering 301L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

BME513 - Introduction to Neurodynamics (EL, GE)

Course Description
Behavior of neurons and neuronal networks examined with methods of nonlinear dynamics. Interpretation in phase space of excitability, spiking, bursting, phase locking, synchronization, competition, and chaos. Applications to the development of novel neurostimulation methods and to understanding dynamic mechanisms behind sensing, learning, memory, and cognition. Readings from the original literature. Prerequisites BME 301L, graduate standing or consent of instructor. (EL, GE)

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI513 INTRO NEURODYNAMICS

BME515 - Neural Prosthetic Systems (GE, EL, IM)

Course Description
Covers several systems that use electrical stimulation or recording of the nervous system to restore function following disease or injury. For each system, the underlying biophysical basis for the treatment, the technology underlying the treatment, and the associated clinical applications and challenges are examined. Systems to be covered include cochlear implants, spinal cord stimulation of pain, vagus nerve stimulation for epilepsy, deep brain stimulation for movement disorders, sacral root stimulation for bladder dysfunction, and neuromuscular electrical stimulation for restoration of movement. Prerequisite: BME 301L or ECE 110L.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI515 NEURAL PROSTHETIC SYSTEMS

BME517 - Neuronal Control of Movement (GE, EL)

Course Description
Course for graduate and upper-level undergraduate students to provide them with an understanding of the neuronal circuits that move our bodies and with techniques for analysis, simulation, and modification of these circuits by neural engineers. Topics start in the periphery with muscles, the spine, and functional electrical stimulation; then proceed centrally to subcortical circuits, deep brain stimulation, and forward models; and conclude with cerebral cortical networks and population decoding. Students are expected to have background in bioelectricity and Matlab programming. Prerequisite: BME 301L or consent of the instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI517 NEURONAL CONTROL OF MOVEMENT

BME518L - Modern Neuroscience Tools (GE, IM, EL)

Course Description
This course introduces students to the various modern tools used to study the function of the brain, and the underlying biophysics of these tools. Content will focus on novel technologies and techniques that employ electrophysiology and optogenetics. Prerequisite: BME 301L.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(QS) Quantitative Studies

BME520L - Computational Foundations of Biomedical Simulation (GE, BB, MC)

Course Description
This is an applications course highlighting the use of parallel simulation in solving biomedical problems. The goal is to provide a foundation in the tools and methods for building and implementing applications for parallel architectures including source-code control and testing frameworks. Topics will include computational abstraction, performance profiling and analysis, scalability, thread- and core-level parallelism, I/O, and visualization. Prerequisites: BME 302L or BME 307 or graduate standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
(QS) Quantitative Studies

BME524 - Nanotechnology in Medicine (GE, BB, MC)

Course Description
Nanomedicine impacts biomedical sciences by applying nanotechnology to develop devices with nanoscale features for applications in therapeutics, diagnostics, and molecular tools. The course covers the application of nanotechnology to advance drug therapy, gene therapy, immunotherapy, and cell therapy and discusses engineering design and fabrication strategies for practical implementation. Most recent advances in the field will be discussed. Student's critical understanding will be evaluated through written or oral presentations. Prerequisite: BME 302L or BME 307 or permission of the instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME526 - Elasticity (GE, BB)

Course Description
Linear elasticity will be emphasized including concepts of stress and strain as second order tensors, equilibrium at the boundary and within the body, and compatibility of strains. Generalized solutions to two and three dimensional problems will be derived and applied to classical problems including torsion of noncircular sections, bending of curved beams, stress concentrations and contact problems. Applications of elasticity solutions to contemporary problem in civil and biomedical engineering will be discussed. Prerequisites: Engineering 201L; Mathematics 353.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE521 ELASTICITY

BME527 - Cell Mechanics and Mechanotransduction (GE, BB, MC)

Course Description
An examination of the mechanical properties of cells and forces exerted by cells in biological processes of clinical and technological importance, and the processes by which mechanical forces are converted into biochemical signals and activate gene expression. Topics include measurement of mechanical properties of cells, cytoskeleton mechanics, models of cell mechanical properties, cell adhesion, effects of physical forces on cell function, and mechanotransduction. Students critically evaluate current literature and analyze models of cell mechanics and mechanotransduction. Prerequisite: BME 302L or BME 307; knowledge of cell biology.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BME528 - Biofluid Mechanics (GE, BB, MC)

Course Description
Methods and applications of fluid mechanics in biological and biomedical systems including: Governing equations and methods of solutions, (e.g. conservation of mass flow and momentum), the nature of biological fluids, (e.g. non Newtonian rheological behavior), basic problems with broad relevance, (e.g. flow in pipes, lubrication theory), applications to cells and organs in different physiological systems, (e.g. cardiovascular, gastrointestinal, respiratory, reproductive and musculoskeletal systems), applications to diagnosis and therapy, (e.g. drug delivery and devices). Prerequisite: Biomedical Engineering 307 or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME529 - Properties and Characterization of Polymeric Materials

Course Description
An introductory graduate-level course in soft condensed matter physics dealing with the synthesis, structure, and properties of polymers, biopolymers and polymeric materials. The course provides a brief introduction to polymer syntheses based on chemical reaction kinetics, it covers polymer characterization and a broad range of properties of polymers and polymeric materials, including solution properties, thermal properties, rheological and mechanical properties, and surface properties. Some topics will be explored in more detail through semester projects, presented at a Polymer Symposium at the end of the semester. Open only to graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME514 PROPER & CHARACT POLYMERIC MAT

BME530 - Introduction to Tissue Biomechanics (GE, BB)

Course Description
Introduction to the mechanical behaviors of biological tissues, cells and molecules of the musculoskeletal and cardiovascular systems. Topics to be covered include static force analysis and nonlinear optimization theory; linearly elastic models for stress-strain analysis and solutions to relevant problems in bioelasticity; models of active structures (e.g., muscles); and introductory theory for finite element analysis. Emphasis will be placed on modeling stress-strain relations with relevance to biological tissues, including experimental means to measure stress and strain in these structures. Prerequisites: Engineering 201 or equivalent; Biomedical Engineering 302 or equivalent; Mathematics 353.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BME531 - Intermediate Biomechanics (GE, BB)

Course Description
Introduction to solid and orthopaedic biomechanical analyses of complex tissues and structures. Topics to be covered include: spine biomechanics, elastic modeling of bone, linear and quasi-linear viscoelastic properties of soft tissue (for example, tendon and ligament), and active tissue responses (for example, muscle). Emphasis will be placed on experimental techniques used to evaluate these tissues. Student seminars on topics in applied biomechanics will be included. Prerequisite: Engineering 201L; Mathematics 353.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME532 - Viscoelastic Biomechanics (GE, BB)

Course Description

This is a fundamental course on the behavior of biological systems from the engineering point of view. The course covers state-of-the-art mechanical models to describe the constitutive behavior of hard and soft, and will include the dependence of macroscopic behavior and properties on material microstructure Emphasis is placed on linear viscoelastic models but quasi-linear and nonlinear forms are introduced to advanced topics will also be provided based on current research and student interest. Prerequisites BME 302L, Math 353 or graduate standing (GE, BB).

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

BME535 - Biomedical Aspects of Blast and Ballistics (GE, BB)

Course Description

Introduction to the biomechanical basis and medical consequences of human injury from blast and ballistics. Exploration of blast and ballistics injuries in both biomechanics and medicine covering the etiology and state-of-the-art analytic and biomechanical models of human injury. Evolution of medical opinion compared to contemporary knowledge of ballistics and blast. Focus on injuries to the head, neck, thorax, abdomen and extremities, and associated medical consequences, including shock, immune system response, traumatic brain injury (TBI) and posttraumatic stress disorder (PTSD). Prerequisite: Biomedical Engineering 302L, graduate standing, or consent of instructor.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

BME540 - Mobile Devices for Biomedicine(GE, IM)

Course Description

This course will develop hardware and software interfaces for recording and analyzing biomedical data using a mobile device, including tablets and handheld smartphones. Coursework includes homework assignments that focus on development of programming skills with an emphasis on delivery of a functioning platform as a final group project. Prerequisite: BME 303L (GE, IM)

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

BME542 - Principles of Ultrasound Imaging (GE, IM)

Course Description

Propagation, reflection, refraction, and diffraction of acoustic waves in biologic media. Topics include geometric optics, physical optics, attenuation, and image quality parameters such as signal-to-noise ratio, dynamic range, and resolution. Emphasis is placed on the design and analysis of medical ultrasound imaging systems. Prerequisites: Biomedical Engineering 303; Engineering 103L; or instructor consent.

Grading Basis

Graded

Units

Min Units:
3

Max Units:
3

BME543L - Cardiac Ultrasound Imaging and Function (GE, IM)

Course Description
Course combines medical instrumentation with a contrasting engineering and clinical perspective, with a focus on ultrasound cardiac imaging and measurement. The classroom aspect covers the physical basis of ultrasound cardiac imaging and measurements. The clinical component consists of cardiac anatomy and physiology, case studies, and clinical observations. The course includes two cardiac dissections and a hands-on experience in the Human Anatomy Lab. Students are required to develop image analysis software from supplied clinical 3D images to automatically determine quantitative physical descriptors of cardiac function. Prerequisite: Biomedical Engineering 354L or instructor consent. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME544 - Digital Image Processing (GE, IM)

Course Description
Introduction to the theory and methods for digital image sampling, enhancement, visualization, reconstruction, and analysis with emphasis on medical applications. Course Outline: #1: Introduction, history, and applications of image processing. #2: Spatial domain image enhancement. #3: Fourier domain image enhancement. #4: Image registration. #5: Inverse problems (denoising, deblurring, interpolation, and super-resolution). #6: Wavelets and compressive sensing. #7: Biological image processing. Undergraduate courses on signals and systems, probability and statistics recommended; knowledge of Matlab required. Prerequisites: Biomedical Engineering 271 or Electrical and Computer Engineering 280L or consent of the instructor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME546 - Magnetic Resonance Imaging: Physical Principles and Sequence Design (GE, IM)

Course Description
An in-depth exploration of the physics and engineering in developing Magnetic Resonance Imaging (MRI). Topics covered include Gradient Recalled Echo, Spin Echo, Inversion Recovery, field of view and resolution constraints/requirements, signal processing, image artifacts, the Bloch Equation, fat suppression techniques, and the derivation of MR signal equation. Prerequisite: Biomedical Engineering 303 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BME547 - Medical Software Design (GE, IM)

Course Description
Software is critical in many medical devices, including device control, feedback and signal processing. This course focuses on software development skills that are ubiquitous in the medical device industry, including software version control, unit testing, fault tolerance, continuous integration testing and documentation. Experience will be gained in Python and JavaScript. The course will be structured around a project, done in small student groups, to build an Internet-connected medical device that measures and processes a biosignal, sends it to a web server, and makes those data accessible to a web client/ mobile application. Prerequisite: Biomedical Engineering 271, Biomedical Engineering 271A, or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QS - (QS) Quantitative Studies

BME548L - Machine Learning and Imaging (GE, IM)

Course Description
Deep learning is rapidly changing how we interpret image data. A large amount of research is now examining how we can use new machine learning tools to automatically interpret microscope, ultrasound and x-ray images, and MRI and CT scans, for example, to aid with diagnostic tasks. In this class, we will review how these machine learning tools work, with a particular focus on how they might be used in a diagnostic setting. This class will also investigate the specific question of how deep learning algorithms can be used to design imaging system hardware to improve performance, which will be the primary focus of the course final project. Prerequisite: BME 303L or graduate standing.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME550 - Modern Microscopy (GE, IM)

Course Description
Overview of novel microscopy techniques that are under development in research laboratories. New techniques are placed in context with basic understanding of image formation in conventional microscopy and laboratory work which applies this knowledge. A group project offers opportunity to examine special topics of interest. Prerequisite: Biomedical Engineering 354 and 303; consent of the instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME551L - Biomedical Optical Spectroscopy and Tissue Optics (GE, IM)

Course Description
This course is designed to provide students with a working knowledge of the theoretical and experimental principles underlying the application of optical spectroscopy and tissue optics in biological and biomedical engineering. Topics covered in this course include: Absorption Spectroscopy; Scattering Spectroscopy; Fluorescence Spectroscopy; Tissue Optics; Monte Carlo Modeling; Diffusion Modeling; Spectroscopic System Design and Signal to Noise Analysis; and Molecular Imaging. This course also includes labs for each topic that is covered, journal article review on emerging technologies and a term project. Prerequisite: Physics 152L.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
MOLCAN551L BME OPT SPECT TISSUE OPTICS

BME552 - Advanced Optics

Course Description
This course presents a rigorous treatment of topics in Photonics and Optics targeted at students with an existing photonics or optics background. Topics will include, Optical Sources, Statistical Optics and Coherence Theory, Detection of Radiation; Nonlinear Optics; Waveguides and Optical Fibers; Modern Optical Modulators; Ultrafast lasers and Applications. These topics will be considered individually and then from a system level perspective. Prerequisite: Electrical and Computer Engineering 340L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS621 ADVANCED OPTICS, ECE541 ADVANCED OPTICS

BME553 - Deep Tissue Optics (GE, IM)

Course Description
This course covers the fundamentals of biomedical optics and their applications to medical imaging and therapy. The course is divided into two parts: (1) fundamentals of photon transport in biological tissue and (2) optical imaging. Part 1 covers biomedical optics, single-scatterer theories, Monte Carlo modeling of photon transport, convolution for broadbeam responses, radiative transfer equation and diffusion theory, hybrid Monte Carlo method, and sensing of optical properties. Part 2 covers ballistic imaging, optical coherence tomography, diffuse optical tomography, photoacoustic tomography, and wavefront-engineering/adaptive optics. Prerequisites: BME 303L or graduate standing (GE, IM)

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BME554L - Embedded Medical Devices (GE, IM, EL)

Course Description
This course will give students experience with the design, function, and deployment of embedded medical devices. Students will develop firmware using the Zephyr Realtime Operating System (RTOS) and will implement kernel timers, threads, work queues, state machines, kernel events, analog-to-digital conversion, pulse width modulation, serial communication protocols, Bluetooth, and software/ hardware debugging. Students will have hands-on experience with electronic hardware testing of flashed firmware.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QS - (QS) Quantitative Studies

BME555 - Advances in Photonics (GE, IM)

Course Description
Overview of photonics techniques and their applications. The course will enhance students' understanding and knowledge of advanced techniques and introduce them to a variety of applications in photonics, the science and technology associated with interactions of light with matter. Photonics techniques include: advanced luminescence, Raman and SERS, optical coherence, advanced microscopy, near-field and confocal methods, remote sensing, and optical biosensing. Applications include: environmental sensing, medical diagnostics, assays using optical detection, optics in multispectral imaging, photonics and solar cells, and nanophotonics. Prerequisite: senior or graduate standing in BME or Chemistry.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CHEM630 ADVANCES IN PHOTONICS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

BME561 - Synaptic Biology Synthetic Technology (AE: EL or MC; GE)

Course Description
This course will cover broad concepts in synaptic neurobiology, taught through the lens of the synthetic technologies driving each major advance. We begin with the quest to determine the whole-brain connectome, a challenge regarded by many as the wholly grail of modern neuroscience. We then explore the limits of understanding individual synapses, the fundamental substrate of learning and neural communication. By studying past and present technological advances, we hope to spark the next revolution in neuroscience, with implications for artificial intelligence and next-generation therapeutics. Area Designator(s): AE: EL or MC; GE.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

BME562 - Biology by Design (GE, MC)

Course Description
Engineering biological systems emphasizing synthetic biology and the application of biological/chemical principles to the design of new biomolecules and cellular pathways. Review of primary scientific literature, highlighting contemporary research in this area, including artificial amino and nucleic acids, gene regulatory systems, directed molecular evolution, recombinant antibodies, novel biosynthesis pathways, cell communication, and the design of minimal organisms. Topics are presented with applications such as drug design, discovery, productions, regenerative medicine, and bioremediation. Prerequisite: Biomedical Engineering 244L. Organic chemistry or biochemistry suggested. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME563 - Transport Processes in HIV Transmission and Prevention (GE, BB, MC)

Course Description
Application of transport theory to analyze processes of HIV migration to target cells in the mucosa of the lower female reproductive tract. Analysis of the introduction, transport and bioactivity of molecules that inhibit these HIV-infection processes, including those acting topically (microbicides) and those introduced in a variety of drug delivery vehicles: semi-solid materials (gels, films) and solid materials (intravaginal rings). A succession of mathematical models will describe elements of the fundamental biology of this system and analyze the performance of specific products that act prophylactically against HIV infection. Prerequisite: Biomedical Engineering 307 or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME564L - Genome Engineering Lab (GE, MC)

Course Description
CRISPR/Cas genome engineering technology has revolutionized the study and engineering of living systems. This course is designed for students interested in learning how to design, develop, and apply the most recent and advanced CRISPR/Cas9 systems for applications in diagnostics, cell line engineering, biopharmaceutical production, and gene and cell therapy. No previous experience in genome editing is required, but it is assumed that students have an introductory knowledge of molecular biology. Prerequisites: BME 307 or MC Area Core or graduate standing. (GE, MC)

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME565L - Environmental Molecular Biotechnology (GE, MC)

Course Description
Principles of genetics and recombinant DNA for environmental systems. Applications to include genetic engineering for bioremediation, DGGE, FISH, micro-arrays and biosensors. Laboratory exercises to include DNA isolation, amplification, manipulation and analysis. Prerequisites: Civil and Environmental Engineering 462L, Biology 20, Biology 201L, or graduate standing, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE661L ENV MOL BIOTECHNOLOGY

BME566 - Transport Phenomena in Cells and Organs (GE, MC)

Course Description
Applications of the principles of mass and momentum transport to the analysis of selected processes of biomedical and biotechnological interest. Emphasis on the development and critical analysis of models of the particular transport process. Topics include: reaction-diffusion processes, transport in natural and artificial membranes, dynamics of blood flow, pharmacokinetics, receptor-mediated processes and macromolecular transport, normal and neoplastic tissue. Prerequisite: Biomedical Engineering 307 or equivalent.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME567 - Biosensors (GE, IM, MC)

Course Description
Theory and applications of biosensors. Basic principles of interactions between analytes and bioreceptors and various transduction techniques: optical, electrochemical, ion-selective electrode-based, voltametric, conductometric, and mass-sensitive techniques as well as novel nanotechnology-based biosensing systems including nanosensors, plasmonic nanoprobes, quantum dots, carbon nanotubes, molecular beacons, and molecular sentinel systems. Applications in chemical, environmental, biological and medical sensing. Paired with Chemistry 601. Prerequisites: senior or graduate standing in BME or instructor's consent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BME570L - Introduction to Biomolecular Engineering (GE, BB, MC)

Course Description
Techniques of molecular biology through linked lectures and laboratory exercises with emphasis on molecular tools to manipulate and analyze DNA and RNA for specific molecular bioengineering applications. Lectures cover the genetic code, replication, transcription, translation, cloning vectors for E. coli, enzymatic manipulation of DNA, gene cloning, synthetic gene design and assembly, DNA sequencing, polymerase chain reaction, site-directed mutagenesis, overexpression and purification of recombinant proteins. Laboratory exercises, linked to lectures, cover cloning, mutagenesis and recombinant protein expression and purification. Prerequisites: BIO 201L or BME 260L or graduate standing in BME.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME574 - Modeling and Engineering Gene Circuits (GE, MC)

Course Description
This course discusses modeling and engineering gene circuits, such as prokaryotic gene expression, cell signaling dynamics, cell-cell communication, pattern formation, stochastic dynamics in cellular networks and its control by feedback or feedforward regulation, and cellular information processing. The theme is the application of modeling to explore 'design principles' of cellular networks, and strategies to engineer such networks. Students need to define an appropriate modeling project. At the end of the course, they're required to write up their results and interpretation in a research-paper style report and give an oral presentation. Prerequisites: Biomedical Engineering 260L or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB574 GENE CIRCUITS

BME577 - Drug Delivery (GE, BB, MC)

Course Description
Introduction to drug delivery in solid tumors and normal organs (for example, reproductive organs, kidney, skin, eyes). Emphasis on quantitative analysis of drug transport. Specific topics include: physiologically-based pharmacokinetic analysis, microcirculation, network analysis of oxygen transport, transvascular transport, interstitial transport, transport across cell membrane, specific issues in the delivery of cells and genes, drug delivery systems, and targeted drug delivery. Prerequisite: Biomedical Engineering 307 and (Engineering 103L or Computer Science 201); or graduate standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BME578 - Quantitative Cell and Tissue Engineering (GE, BB, MC)

Course Description
This course will serve as an overview of selected topics and problems in the emerging field of tissue engineering. General topics include cell sourcing and maintenance of differentiated state, culture scaffolds, cell-biomaterials interactions, bioreactor design, and surgical implantation considerations. Specific tissue types to be reviewed include cartilage, skin equivalents, blood vessels, myocardium and heart valves, and bioartificial livers. Prerequisite: Biomedical Engineering 302L or 307 or PhD student standing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME580 - An Introduction to Biomedical Data Science (GE)

Course Description
This course will teach a combination of theory and application of biomedical data science principles using multi-scale biomedical data, including multi-omics, wearable sensor, and electronic health records data. Basic principles of data mining, exploratory data analysis, and statistics will be reviewed, and students will be introduced to supervised and unsupervised machine learning and model evaluation and selection methods. Methodology learned in classes will be applied in the assignments and class project to real world multi-omics, wearable sensor, and electronic health records data. Prerequisite: BME 244L or graduate standing. (GE)

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME590 - Special Topics in Biomedical Engineering

Course Description
Special subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME590D - Special Topics with Discussion

Course Description
To be used as a generic course number for any special topics course with discussion sections. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME590DL - Special Topics with Lab and Discussion

Course Description
To be used as a generic course number for any special topics course with lab and discussion sections. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME590L - Special Topics with Lab

Course Description
To be used as a generic course number for any special topics course with lab sections. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME601L - Introduction to Neural Engineering

Course Description
Introduction to neural engineering with emphasis on the electrophysiology of neurons from a quantitative perspective. Topics include the ionic basis of action potentials, the Hodgkin-Huxley model, impulse propagation, source-field relationships, and an introduction to functional electrical stimulation. Not open to students who have taken BME 244L, 301L, 302L, 303L, or 307.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

BME609 - Optics and Photonics Seminar Series

Course Description
Weekly seminar on the current research topics in the field of optics and photonics.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ECE549 OPTICS & PHOTONICS SEMINAR SER, PHYSICS549 OPTICS & PHOTONICS SEMINAR SER

BME644 - Physiology for Engineers

Course Description
This course will provide students with the fundamental knowledge of human physiology based on an understanding of how cells, tissues, organs, and organ systems function together in the human body. The physiology of human organ systems will be covered, with emphasis on the critical concept of homeostasis, cellular physiology, nervous systems, cardiovascular systems, renal physiology, and muscle system. Clinical scenarios will be incorporated throughout the course so that students can think critically about how disrupting the normal structure and function of the human body leads to disease processes. Open to graduate students only; students who have taken BME 244L are not eligible to take this course.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME671L - Signal Processing and Applied Mathematics

Course Description
This introductory applied mathematics course for graduate students covers the basics of linear systems theory including convolutions, Fourier Series, Fourier Transforms, and Laplace Transforms with emphasis on application to biomedical systems. Students will also get a basic understanding of how to program in MATLAB as they apply the course material to process sounds, images, and other biological signals. Not open to students who have taken BME 271.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

BME673L - Advanced Design and Manufacturing (GE, AE)

Course Description
Students must have exposure to 3DCAD and ideally have completed a capstone design project experience to enroll in this course. This course will expand and refine these skills in preparation for a career in product design and/or R&D. Design, prototyping and manufacturing skills will be discussed in class followed by a discrete project that will require use of these skills. Typically, each project will take place over the course of one or two weeks. A final project that will integrate several of the skills learned in the course will act as final examination for the course. Prerequisites: BME 474L or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME690 - Advanced Topics in Biomedical Engineering

Course Description
Advanced subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME701S - BME Graduate Seminars

Course Description
This course is a weekly seminar required of all 2nd year BME PhD students. The seminar series will focus on preparation for the written portion of the preliminary exam with workshops and lectures, interleaved with seminars on career development. Writing instruction will include a seminar on creating clear and effective prose and discussions by BME faculty of each section of the document. Students will draft each section, and conduct peer-reviews in small groups. The career seminars with include methods to explore career options, networking, and internships. Students will be required to actively participate and provide feedback on seminars. More than two absences results in a failing grade.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

BME702S - BME Graduate Seminars

Course Description
Two semester, weekly seminars series required of all BME graduate students. Students are exposed to the breadth of research topics in BME via seminars given by BME faculty, advanced graduate students, and invited speakers. At the end of each semester students are required to write a synopsis of the seminars attended. More than three unexcused absences will result in a failing grade.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
0

Max Units:
0

BME703S - Biomedical Engineering Distinguished Seminars

Course Description
This seminar course is designed for PhD students in Biomedical Engineering to engage with cutting-edge research through invited talks by renowned academics and industry leaders. Each semester, students will have the opportunity to attend seminars featuring experts from a wide range of disciplines, including biomaterials, neuroengineering, computational biology, translational imaging, and biophotonics. The seminar series fosters interdisciplinary collaboration, enhances scientific communication skills, and provides exposure to novel research methodologies and innovations in the biomedical field. Attendance is mandatory for enrolled students, and active participation in post-seminar discussions is encouraged.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BME705L - Biotech Design I

Course Description
This course is the first semester of a two semester biochemical engineering design course sequence on biotechnology. It is a team focused project based course. Student teams take on real world problems and evaluate the commercial and technical potential of biotechnological solutions. The first semester course is primarily conceptual (on paper) design which students can then build and test in the second semester design course, Biotech Design II. Previous projects have included the design of diagnostics, small molecule and protein drugs, cell based therapies, CRISPR based therapeutics as well as novel bioprocesses.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME706L - Biotech Design II

Course Description
This is the second semester of a two semester biochemical engineering design course sequence on biotechnology for those interested in the pharmaceuticals and broader biotechnology industries. In this second semester, student teams will design, build and test a biochemical process for the production of desired biochemical product including pharmaceuticals and other small molecule precursors.The course will cover basic principles of product/process design and commercialization including project management, market and economic constraints, regulatory considerations and an intellectual property assessment. Prerequisite: BME 705L.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME711S - Biological Engineering Seminar Series (CBIMMS and CBTE)

Course Description
Seminar series featuring in alternate weeks invited speakers and pre-seminar discussions. Research topics in biological engineering, with emphasis on bioinspired materials and materials systems, biomolecular, and tissue engineering. Enrollment is required of all BIMMS and BTE certificate program students in their first and second year. Open to others for credit or audit. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ME717S BIOLOGICAL ENGINEERING SEM

BME712S - Biological Engineering Seminar Series (CBIMMS and CBTE)

Course Description
Seminar series featuring in alternate weeks invited speakers and pre-seminar discussions. Research topics in biological engineering, with emphasis on bioinspired materials and materials systems, biomolecular, and tissue engineering. Enrollment is required of all BIMMS and BTE certificate program students in their first and second year. Open to others for credit or audit. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ME718S BIOLOGICAL ENGINEERING SEM

BME713S - QBio Seminar Series

Course Description
Frontiers in Quantitative Biodesign is an advanced-level, interdisciplinary seminar series designed to introduce students to the latest cutting-edge technologies and techniques in the field of quantitative biodesign. It aims to give students an in-depth understanding of how mathematical and computational approaches can be harnessed to accelerate, de-risk, and optimize the design and engineering of biological systems and to create tools to control biological processes.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BME728S - Teaching Seminar for New Teaching Assistants

Course Description
This 3 credit seminar is for BME PhD students concurrently serving as a TA for the first time. It is mandatory for those entering the program in Fall 2015 and optional for all BME PhD students who entered the program before Fall 2015. Throughout this course, students will attend a series of seminars (5 minimum) designed to improve pedagogical training and support for teaching assistants. Students will practice concepts learned in the seminars during TAship. Teaching assistants will receive feedback through performance evaluations by the professor. Evaluations will be given twice per semester. The teaching assistants also complete an activity log to document time spent.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME729S - Teaching Seminar for Repeat Teaching Assistants

Course Description
This 3 credit seminar is for BME PhD students concurrently serving as a TA for the second time or later. It is mandatory for those entering the program in Fall 2015 and optional for all BME PhD students who entered the program before Fall 2015. Throughout this course, students will participate in mentoring activities designed to improve pedagogical training and support for teaching assistants. Students will practice concepts learned in the seminars during TAship. Teaching assistants will receive feedback through performance evaluations by the professor. Evaluations will be given twice per semester. The teaching assistants also complete an activity log to document time spent.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME733 - Experimental Design and Biostatistics for Basic Biomedical Scientists

Course Description
The use and importance of statistical methods in laboratory science, with an emphasis on the nuts and bolts of experimental design, hypothesis testing, and statistical inference. Central tendency and dispersion, Gaussian and non-Gaussian distributions, parametric and nonparametric tests, uni- and multivariate designs, ANOVA and regression procedures. Ethical issues in data handling and presentation. Student presentations in addition to formal lectures. Intended for third-year graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
PHARM733 EXPERIMENT DESIGN & STATISTICS, NEUROBIO733 EXPERIMENT DESIGN & STATISTICS, CMB733 EXPERIMENT DESIGN & STATISTICS, MOLCAN733 EXPERIMENT DESIGN & STATISTICS

BME760L - Medical Neuroscience and Clinical Human Neuroanatomy

Course Description
Explore the structure, functional organization, and neurobiology of the human central nervous system, its integrative actions, and the impairments of sensation, action and cognition that accompany injury or disease. Features a variety of instructional methods, including hands-on examination and dissection of human brain specimens, asynchronous video tutorials, live seminars with clinical experts, patient-interviews, and cases studies. Employs team-based learning, with graduate students integrated into teams of first-year medical students for real-time problem-solving and discovery. Requires general knowledge of cell and molecular biology, mammalian physiology and anatomy.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
NEUROSCI760L MEDICAL NEUROSCIENCE, EVANTH760L MEDICAL NEUROSCIENCE

BME771 - Bioconjugation in drug biomaterials and drug delivery systems

Course Description
Bioconjugation chemistry is the science of coupling biomolecules for a wide range of applications. For example, proteins may be coupled with one polymer to enhance its stability in serum or polymers may be coupled to each other to form hydrogels. A wide variety of bioconjugates are used in the delivery of pharmaceuticals, in sensors, in medical diagnostics, and in tissue engineering. Basic concepts of chemical ligation, including the choice and design of conjugate linkers depending on the type of biomolecule and desired application, such as degradable versus nondegradable linkers. The class will focus on biomaterial and drug delivery strategies.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME773L - Design Health 1: Discover

Course Description
First semester of a 3 semester design course sequence (BME 773L, BME 774L, BME 775L) for graduate students. Students will expand on their formal engineering design principles knowledge by applying it to identify and research a need drawn from the Duke Hospital/medical personnel, local companies and organizations around Duke University. Students will develop and determine design feasibility for a device, system, material, or process subject to real world constraints. Recommended prerequisite: BME capstone design experience.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BME774L - Design Health 2: Design

Course Description
Second semester of a 3 semester design course sequence (BME 773L, 774L,775L) for graduate students. Students will iterate their design solution drawn from the Duke Hospital/medical personnel, local companies and organizations around Duke University. Students will develop and determine design feasibility for a device, system, material, or process subject to real world constraints. Prerequisite: BME 773L

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

BME775L - Design Health 3: Deliver

Course Description
Third semester of a 3 semester design course sequence (BME 773L, BME 774L and BME 775L) for graduate students. Students will expand on their formal engineering design principles knowledge by applying it to identify and research a need drawn from the Duke Hospital/medical personnel, local companies and organizations around Duke University. Students will develop and determine design feasibility for a device, system, material, or process subject to real world constraints. Prerequisite: BME capstone design experience, and have already taken BME 773L and BME 774L.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME788 - Invention to Application: Healthcare Research Commercialization

Course Description

Interdisciplinary teams of students from engineering, medical science, business, and medicine work together to understand and evaluate the commercial potential of Duke faculty research innovations and develop a comprehensive research translation and business plan for one chosen opportunity. Learning includes understanding technology, product development, marketing, finance, regulatory requirements, and reimbursement. In addition to weekly lectures, students are mentored in this real world experience by a team including technology transfer experts, venture capitalists, researchers, physicians, and entrepreneurs. Prerequisites: none. Consent of instructor required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

BME789 - Internship in Biomedical Engineering

Course Description

Student gains practical biomedical engineering experience by taking a job in industry, and writing a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies. May be repeated with consent of the advisor and the director of graduate studies. Credit/no credit grading only.

Grading Basis

Credit / No Credit

Units

Min Units:

1

Max Units:

3

BME790 - Advanced Topics for Graduate Students in Biomedical Engineering

Course Description

Advanced subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

BME790L - Advanced Topics with the Lab for Graduate Students in Biomedical Engineering

Course Description

Advanced subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required. Includes laboratory component.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

BME791 - Graduate Independent Study

Course Description
First Independent Study course in advanced study and research areas of biomedical engineering. Approval of adviser is required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME792 - Continuation of Graduate Independent Study

Course Description
Second independent study in advanced study and research areas of biomedical engineering. Approval of adviser is required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME803 - Advanced Computational Neuroengineering

Course Description
This advanced course for PhD students covers the fundamentals of computational modeling of neurons and neuronal circuits and the decoding of information from populations of spike trains. Topics include: integrate and fire neurons, spike response models, homogeneous and inhomogeneous Poisson processes, neural circuits, Weiner (optimal) adaptive filters, neural networks for classification, population vector coding and decoding. Programming assignments and projects will be carried out using Python.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME804 - Developments in Neural Engineering

Course Description
The objective of this course is to provide in depth exposure to and critical analysis of current topics in neural engineering. Students will develop skills of critical reading and analysis, data synthesis and presentation, and discussion leadership. The course will serve the secondary purpose of providing exposure of our neural engineering faculty and students to leaders in the field. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

BME844 - Advanced Ultrasonic Imaging

Course Description
This course provides students with a mathematical basis of ultrasonic imaging methods. Topics include K-space, descriptions of ultrasonic imaging, ultrasonic beam-former design, tissue motion and blood flow imaging methods, and novel ultrasonic imaging methods. Students conduct extensive simulations of ultrasonic imaging methods. Prerequisite: Biomedical Engineering 333.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME845 - Elasticity Imaging

Course Description
Theory and practical implementation of elasticity imaging techniques, including static, dynamic, physiologic and acoustic radiation force based methods; continuum mechanics; wave propagation in soft tissues; algorithms for quantifying wave speed; and material models employed in elasticity reconstruction methods (linearity, anisotropy, and viscoelasticity); simulations tools employed during system development will be introduced, including FEM modeling approaches and ultrasonic imaging simulation tools. Assignments include weekly readings and literature reviews, weekly homework (simulations/FEM modeling tools), and a final project. Prerequisites: BME 542 and BME 530 or instructor permission.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

BME848L - Radiology in Practice

Course Description
Designed to complement Biomedical Engineering 333 Modern Diagnostic Imaging Systems. Review and real-life exercises on principles of modern medical imaging systems with emphasis on the engineering aspects of image acquisition, reconstruction and visualization, observations of imaging procedures in near clinical settings, and hands-on experience with the instruments. Modalities covered include ultrasound, CT, MRI, nuclear medicine and optical imaging. Prerequisite: Biomedical Engineering 333 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDPHY738 RADIOLOGY IN PRACTICE

BME890 - Advanced topics for PhD students

Course Description
Advanced subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME899 - Special Readings in Biomedical Engineering

Course Description
Individual readings in advanced study and research areas of biomedical engineering. Approval of director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

BME500-1 - Regulation and Reimbursement of Medical Products: Practice and Policy

Course Description
The objective of the course is to give a practical overview of the current regulatory and reimbursement landscape for medical products (drugs, devices, and biologics), as well as understanding of current issues that may influence existing and/or future regulatory and reimbursement practices and policies. The focus will be primarily on US regulation and reimbursement policy, but international context will be included as appropriate. Students can expect to gain basic understanding of how drugs, devices, and biological products are tested and regulated as well as the multiple stakeholders involved in the purchase and reimbursement of medical products. Area Designator(s): GE

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HLTHPOL540 REIMBURSEMENT MED PROD

BME500-2 - Quality Management Systems for Biomedical Engineers

Course Description
The course establishes industry best-practice procedures and methods for the development of medical devices within a regulated environment such as that required by the FDA in 21CFR820. Specific key elements of a regulatory submission will be generated as the course progresses through elements of specification, risk management, verification and validation. Alongside understanding and exercising key principles of Quality Management as applied to both design & manufacture, students will also learn how to operate within typical industry systems and organizational structures. Area Designator: GE

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

BME590-1 - Special Topics in Biomedical Engineering

Course Description
Special subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

BME590L-1 - Special Topics with Lab

Course Description
Half-credit special topics course.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

BME790S-1 - Advanced Topics for Graduate Students in Biomedical Engineering

Course Description
Advanced subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BME791-1 - Graduate Independent Study

Course Description
First Independent Study course in advanced study and research areas of biomedical engineering.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

BRAINSOC795T - Bass Connections in Brain & Society Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary by semester and section. Teams of graduate and undergraduate students work with faculty to build connections between neuroscience and socially challenging questions in healthcare, the humanities, policy, economics, ethics and law. Teams may include external partners. Work may run in parallel with or contribute to ongoing faculty-led research. Teams participate in seminars, data collection and analysis, lab work, field work, and other relevant learning or research experiences. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

BRAINSOC796T - Bass Connections in Brain & Society Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary by semester and section. Teams of graduate and undergraduate students work with faculty to build connections between neuroscience and socially challenging questions in healthcare, the humanities, policy, economics, ethics and law. Teams may include external partners. Work may run in parallel with or contribute to ongoing faculty-led research. Teams participate in seminars, data collection and analysis, lab work, field work, and other relevant learning or research experiences. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CBB510S - Computational Biology Seminar

Course Description
A weekly series of seminars on topics in computational biology presented by invited speakers, Duke faculty and CBB doctoral and certificate students. This course is required for all first and second year CBB students. In addition, all certificate students must register and receive credit for the seminar for four semesters

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

CBB511 - Journal Club

Course Description
A weekly series of discussions led by students that focus on current topics in computational biology. Topics of discussion may come from recent or seminal publications in computational biology or from research interests currently being pursued by students. First and second year CBB doctoral and certificate students are strongly encouraged to attend as well as any student interested in learning more about the new field of computational biology

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

CBB520 - Genome Tools and Technologies

Course Description
This course introduces the laboratory and computational methodologies for genetic and protein sequencing, mapping and expression measurement.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CBB526 - Data Science

Course Description
Data science is 'the science of planning for, acquisition, management, analysis of, and inference from data'. This course systematically covers the concepts, ideas, tools, and example applications of data science in an end-to-end manner. We emphasize data-driven thinking, data processing and analytics, and extracting actionable values from data. We focus on the interactions between data and applications, data modeling, and data processing, data analytics, and the essential algorithms and tools. Prerequisites: A statistics course (Statistics 111 or higher), data structures and algorithms (Computer Science 201), and relational databases (Computer Science216 or 316).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI526 DATA SCIENCE, ECE583 DATA SCIENCE

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

CBB540 - Statistical Methods for Computational Biology

Course Description
Methods of statistical inference and stochastic modeling with application to functional genomics and computational molecular biology. Topics include: statistical theory underlying sequence analysis and database searching; Markov models; elements of Bayesian and likelihood inference; multivariate high-dimensional regression models, applied linear regress analysis; discrete data models; multivariate data decomposition methods (PCA, clustering, multi-dimensional scaling); software tools for statistical computing. Prerequisites: multivariate calculus, linear algebra and Statistical Science 611.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA613 STAT MTHDS/COMPUTATIONAL BIOLG

CBB561 - Computational Sequence Biology

Course Description
Introduction to algorithmic and computational issues in analysis of biological sequences: DNA, RNA, and protein. Emphasizes probabilistic approaches and machine learning methods, e.g. Hidden Markov models. Explores applications in genome sequence assembly, protein and DNA homology detection, gene and promoter finding, motif identification, models of regulatory regions, comparative genomics and phylogenetics, RNA structure prediction, post-transcriptional regulation. Prerequisites: basic knowledge algorithmic design (Computer Science 532 or equivalent), probability and statistics (Statistical Science 611 or equivalent), molecular biology (Biology 118 or equivalent). Alternatively, consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI561 COMPUTATIONAL SEQUENCE BIOLOGY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

CBB562 - High-Resolution Cryo-Electron Microscopy Image Analysis

Course Description

Cryo-electron microscopy (EM) is a Nobel Prize winning technique to determine the structure of proteins and protein complexes at molecular resolution. Computational imaging aspects of cryo-EM, including image enhancement, reconstruction, classification and burst movie processing used to determine the high-resolution structure of proteins in 3D. Overview of the structure determination pipeline, focusing primarily on the data analysis aspects of the technique including the application of machine learning and deep learning strategies to extract atomic resolution information from millions of noisy images of proteins. Recommended prerequisite: Programming experience.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI562 CRYO-EM IMAGE ANALYSIS, BIOCHEM562 CRYO-EM IMAGE ANALYSIS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

CBB574 - Modeling and Engineering Gene Circuits (GE, MC)

Course Description

This course discusses modeling and engineering gene circuits, such as prokaryotic gene expression, cell signaling dynamics, cell-cell communication, pattern formation, stochastic dynamics in cellular networks and its control by feedback or feedforward regulation, and cellular information processing. The theme is the application of modeling to explore 'design principles' of cellular networks, and strategies to engineer such networks. Students need to define an appropriate modeling project. At the end of the course, they're required to write up their results and interpretation in a research-paper style report and give an oral presentation. Prerequisites: Biomedical Engineering 260L or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME574 GENE CIRCUITS

CBB575 - Quantitative Methods for Biomedical Studies

Course Description

Quantitative methods for analyzing biomedical data. Data generation and related domain knowledge, data visualization and pre-processing tools, scientific problem formulation and data modeling, quantitative methods selection and application, pipeline programming and coding, and result checking and visualization. The interdisciplinary approach prepares students in math, statistics, biostatistics, computer science, and engineering for careers in biomedical data science. Recommended prerequisites: Multivariate calculus, linear algebra, undergraduate-level probability, undergraduate-level statistics, and R programming.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH574 QUANT METHODS IN BIOMED, BIOSTAT917 QUANT METHODS IN BIOMED

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

CBB590 - Special Topics in Computational Biology

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CBB591 - Independent Study

Course Description
Faculty directed experimental or theoretical research.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
9

CBB634 - Geometric Algorithms

Course Description
Models of computation and lower-bound techniques; storing and manipulating orthogonal objects; orthogonal and simplex range searching, convex hulls, planar point location, proximity problems, arrangements, linear programming and parametric search technique, probabilistic and incremental algorithms. Prerequisite: Computer Science 532 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI634 GEOMETRIC ALGORITHMS

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

CBB658 - Structural Biochemistry I

Course Description
Principles of modern structural biology. Protein-nucleic acid recognition, enzymatic reactions, viruses, immunoglobulins, signal transduction, and structure-based drug design described in terms of the atomic properties of biological macromolecules. Discussion of methods of structure determination with particular emphasis on macromolecular X-ray crystallography NMR methods, homology modeling, and bioinformatics. Students use molecular graphics tutorials and Internet databases to view and analyze structures. Prerequisites: organic chemistry and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM658 STRUCTURAL BIOCHEMISTRY I, CMB658 STRUCTURAL BIOCHEMISTRY I, CELLBIO658 STRUCTURAL BIOCHEMISTRY I, UPGEN658 STRUCTURAL BIOCHEMISTRY I, SBB658 STRUCTURAL BIOCHEMISTRY I

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CBB659 - Structural Biochemistry II

Course Description
Continuation of Biochemistry 658. Structure/function analysis of proteins as enzymes, multiple ligand binding, protein folding and stability, allostery, protein-protein interactions. Prerequisites: Biochemistry 658, organic chemistry, physical chemistry, and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM659 STRUCTURAL BIOCHEMISTRY II, CELLBIO659 STRUCTURAL BIOCHEMISTRY II, SBB659 STRUCTURAL BIOCHEMISTRY II, UPGEN659 STRUCTURAL BIOCHEMISTRY II

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CBB663 - Algorithms in Structural Biology and Biophysics

Course Description
Introduction to algorithmic and computational issues in structural molecular biology and molecular biophysics. Emphasizes geometric algorithms, provable approximation algorithms, computational biophysics, molecular interactions, computational structural biology, proteomics, rational drug design, and protein design. Explores computational methods for discovering new pharmaceuticals, NMR and X-ray data, and protein-ligand docking. Prerequisites: students should have some familiarity with algorithms, and a basic knowledge of molecular biology. Alternatively, consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI663 ALGORITHMS IN STRUCTURAL BIOL

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences, (QS) Quantitative Studies

CBB700 - Internship

Course Description
Student gains practical experience by taking an internship in industry, and writes a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies. May be repeated with consent of the advisor and the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

CBB910 - Career Development and Prep

Course Description
Students gain a holistic view of what skills they will need to be successful graduate students and academic scholars. The curriculum focuses on the unique challenges doctoral students face and the tools needed for long-term success in academia or industry.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOSTAT910 CAREER DEVELOPMENT AND PREP

CBB914 - Graphical Models for Biological Data

Course Description
Introduction to probabilistic graphical models and structured prediction, with applications in genetics and genomics. Hidden Markov Models, conditional random fields, stochastic grammars, Bayesian hierarchical models, neural networks, and approaches to integrative modeling. Algorithms for exact and approximate inference. Applications in DNA/RNA analysis, phylogenetics, sequence alignment, gene expression, allelic phasing and imputation, genome/epigenome annotation, and gene regulation. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOSTAT914 GRAPHICAL MODELS, COMPSCI763 GRAPHICAL MODELS

CBB916 - Career Development and Prep II

Course Description
Students gain a holistic view of career choices and how to structure a targeted job search. The curriculum focuses on exploring different career options in academia or industry, communicating unique value to employers, and organizing a job search. May be repeated with the consent of the advisor and the Director of Graduate Studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOSTAT916 CAREER DEVELOPMENT AND PREP II

CEE501 - Applied Mathematics for Engineers

Course Description
Advanced analytical methods of applied mathematics useful in solving a wide spectrum of engineering problems. Applications of linear algebra, calculus of variations, the Frobenius method, ordinary differential equations, partial differential equations, and boundary value problems. Prerequisite: MATH 353 or equivalent and undergraduate courses in solid and/or fluid mechanics, or graduate student standing in an engineering program.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CEE506 - Environmental Spatial Data Analysis

Course Description
Environmental Spatial Data Analysis (ESDA) provides an introduction on how to leverage and analyze geospatial data using Python. The topics that are covered include geospatial numerical arrays, geostatistics, digital cartography, classification, regression, spectral analysis, clustering, terrain analysis, bayesian statistics, and dimensionality reduction. Prerequisite: EGR 238L or graduate standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CEE511 - Construction Management

Course Description
This course is a broad overview of the roles and responsibilities of the construction management engineer. Included in this is an examination of: Project Management Planning, Cost Management, Time Management, Quality Management, Contract Administration, and Safety Management. Topics covered will include: defining the responsibilities and management structure of the project management team, organizing and leading by implementing project controls, defining roles and responsibilities and developing communication protocols, and identifying elements of project design and construction likely to give rise to disputes and claims. Field trips.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE520 - Continuum Mechanics

Course Description
Tensor fields and index notation. Analysis of states of stress and strain. Conservation laws and field equations. Constitutive equations for elastic, viscoelastic, and elastic-plastic solids. Formulation and solution of simple problems in elasticity, viscoelasticity, and plasticity.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CEE521 - Elasticity (GE, BB)

Course Description
Linear elasticity will be emphasized including concepts of stress and strain as second order tensors, equilibrium at the boundary and within the body, and compatibility of strains. Generalized solutions to two and three dimensional problems will be derived and applied to classical problems including torsion of noncircular sections, bending of curved beams, stress concentrations and contact problems. Applications of elasticity solutions to contemporary problem in civil and biomedical engineering will be discussed. Prerequisites: Engineering 201L; Mathematics 353.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME526 ELASTICITY

CEE525 - Wave Propagation in Elastic and Poroelastic Media

Course Description
Basic theory, methods of solution, and applications involving wave propagation in elastic and poroelastic media. Analytical and numerical solution of corresponding equations of motion. Linear elasticity and viscoelasticity as applied to porous media. Effective medium, soil/rock materials as composite materials. Gassmann's equations and Biot's theory for poroelastic media. Stiffness and damping characteristics of poroelastic materials. Review of engineering applications that include NDT, geotechnical and geophysical case histories. Prerequisite: Mathematics 353, graduate standing, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE530 - Introduction to the Finite Element Method

Course Description
Investigation of the finite element method as a numerical technique for solving linear ordinary and partial differential equations, using rod and beam theory, heat conduction, elastostatics and dynamics, and advective/diffusive transport as sample systems. Emphasis placed on formulation and programming of finite element models, along with critical evaluation of results. Topics include: Galerkin and weighted residual approaches, virtual work principles, discretization, element design and evaluation, mixed formulations, and transient analysis. Prerequisites: a working knowledge of ordinary and partial differential equations, numerical methods, and programming in FORTRAN or MATLAB.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME524 FINITE ELEMENT METHOD

CEE531 - Finite Element Methods for Problems in Fluid Mechanics

Course Description
An extensive introduction to finite element methods for fluid flow problems, covering methods for general transport problems, the compressible Euler and Navier-Stokes equations, the incompressible Navier-Stokes equations, and subsurface flows in porous media. Knowledge on the foundations of numerical analysis and finite elements (i.e., structural mechanics or thermal transfer problems) is advisable but not a prerequisite. Taking this course in conjunction with CEE 530 (254) 'Introduction to the Finite Element Method', CEE 630 (255) 'Nonlinear Finite Element Analysis', or CEE 635 (256) 'Computational Methods for Evolving Discontinuities' should also be considered by students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE551 - Risk and Resilience Engineering

Course Description
Risks to engineered systems, human life, the environment, and economic performance have long been important considerations in all types of engineering. Probabilistic risk analysis provides a means for assessing and mitigating these risks. However, the modern world also requires systems that exhibit resilience, by assimilating new information, adapting to change, and performing in unexpected conditions. This course covers the theory and applications of risk and resilience engineering, including quantification, interpretation, design, and management. Introductory level knowledge in probability is assumed.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE560 - Environmental Transport Phenomena

Course Description
Principles of mathematical modeling of environmental systems. Mass balances, ideal reactor models for lakes, rivers, atmospheric systems, and population dynamics. Derivation of Navier-Stokes equations, advective diffusion equation, mass transfer and fluid dynamics. Conservation principles in the atmosphere and bodies of water, fundamental equations for transport in the atmosphere and bodies of water, scaling principles, simplification, turbulence, turbulent transport and boundary layers.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CEE561L - Environmental Aquatic Chemistry

Course Description
Principles of chemical equilibria and kinetics as applied in environmental engineering and science processes. Topics include acid-base equilibrium, the carbonate system, metal complexation, oxidation/reduction reactions, mineral phase solubility and surface sorption. Applied environmental systems include water treatment, soil remediation, air pollution and green engineering. Graduate-level requirements include specific laboratory work and written assignments. Open to graduate students; instructor consent required for undergraduates. Not open to students who have taken CEE 461L.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON542L ENVIRONMENTAL AQUATIC CHEM

CEE562L - Applied Biological Principles and Processes in Environmental Engineering

Course Description
Fundamentals of microbiology as it relates to biological environmental engineering processes. Topics include microbial metabolism, microbial kinetics and stoichiometry, and bioreactor models. Applications include unit processes in wastewater treatment, bioremediation, bioreactors, waste to bioenergy. Laboratory included. Graduate-level requirements include a term paper and/or a project. Open to graduate students; instructor consent required for undergraduates. Not open to students who have taken CEE 462L.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE563 - Chemical Fate of Organic Compounds

Course Description
This course will review environmental organic chemistry basics with a focus on contaminant chemistry. We will discuss quantitative processes used in predicting the fate and distribution of organic chemicals in the environment with regards to equilibrium/thermodynamics and some kinetic considerations. Topics include: equilibrium partitioning among air, water, sediments and biological tissues; factors affecting bioaccumulation and biomagnification; processes influencing the ultimate fate of organic contaminants in rivers and lakes; and processes influencing global transport. Prerequisites: University-level general chemistry and organic chemistry within last four years.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON540 CHEM FATE ORG COMPOUNDS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CEE563D - Chemical Fate of Organic Compounds

Course Description
Equilibrium, kinetic, and analytical approaches applied to quantitative description of processes affecting the distribution and fate of anthropogenic and natural organic compounds in surface and ground waters, including chemical transfers between air, water, soils/sediments, and biota; and thermochemical and photochemical transformations. The relationships between organic compound structure and environmental behavior will be emphasized. Sampling, detection, identification, and quantification of organic compounds in the environment. Prerequisite: university-level general chemistry and organic chemistry within last four years.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON540D CHEM FATE ORG COMPOUNDS

CEE564 - Physical Chemical Processes in Environmental Engineering

Course Description
Theory and design of fundamental and alternative physical and chemical treatment processes for pollution remediation. Reactor kinetics and hydraulics, gas transfer, adsorption, sedimentation, precipitation, coagulation/flocculation, chemical oxidation, disinfection. Prerequisites: introductory environmental engineering, chemistry, graduate standing, or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE565 - Environmental Analytical Chemistry

Course Description
This course covers the fundamentals and applications of analytical chemistry as applied to detection, identification, and quantification of anthropogenic contaminants in environmental samples including air, water, soil, sediment, and biota. The topics include both sample preparation methods (i.e. wet chemistry) and instrumental analysis (e.g. mass spectrometry, chromatography, and optical spectroscopy). Particular emphasis is placed on current advancements in measurement science as applied to environmental chemistry. The material includes both theoretical and practical aspects of environmental analysis. Prerequisite: CHEM 131 or CHEM 151L or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON566 ENVIRON. ANALYTICAL CHEM.

CEE566 - Environmental Microbiology

Course Description
Fundamentals of microbiology and biochemistry as they apply to environmental engineering. General topics include cell chemistry, microbial metabolism, bioenergetics, microbial ecology and pollutant biodegradation. Prerequisite: Civil and Environmental Engineering 462L or graduate standing or consent of the instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE574 - Remote Sensing in Coastal Environments

Course Description
Introduction to the field of remote sensing and image processing with focus on applications to coastal monitoring and currently open research questions. Students will acquire an operational knowledge of various remote-sensing tools and data types, with emphasis on their application in coastal areas. Content will include theory, in-class laboratory exercises, and projects with environmental applications. Prerequisite: introductory or AP physics preferred or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON530 REMOTE SENSING COASTAL ENV, ECS530 REMOTE SENSING COASTAL ENV

General Education Curriculum Codes
NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

CEE575 - Air Pollution Engineering

Course Description
Introduction to air pollutants. Upon completion, students will have a knowledge of which air pollutants are of concern, their source, fate, atmospheric transport and transformation and policies developed to help manage the problem. Topics include: air pollutants of importance, air pollution impacts, sources of air pollutants, atmospheric transport (including dispersion and deposition), atmospheric chemistry, aerosol chemistry and physics, control strategy development and air pollution management. Additionally, the course covers indoor air pollution with an emphasis on issues related to airborne viral disease emission, transport, and infection. Prerequisite: Chemistry 20, 21, or 101DL, or graduate standing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE581 - Pollutant Transport Systems

Course Description
Distribution of pollutants in natural waters and the atmosphere; diffusive and advective transport phenomena within the natural environment and through artificial conduits and storage/treatment systems. Analytical and numerical prediction methods. Prerequisite: Civil and Environmental Engineering 301L and Mathematics 353, or equivalents.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE584 - Physical Hydrology

Course Description
This course provides a process-based introduction to the different components of the terrestrial hydrologic cycle including precipitation, evapotranspiration, interception, snow hydrology, open-channel flow, flows in porous media, infiltration, and groundwater. An overview of catchment hydrology, global hydrology, frequency analysis, urban hydrology, and ecohydrology are also be discussed. Prerequisite: CEE 463L or graduate standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE621 - Plasticity

Course Description
Inelastic behavior of soils and engineering materials. Yield criteria. Flow rules. Concepts of perfect plasticity and plastic hardening. Methods of rigid-plasticity. Limit analysis. Isotropic and kinematic hardening. Plastic softening. Diffused damage. Thermo-plasticity. Visco-plasticity. Prerequisite: Civil and Environmental Engineering 520 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE622 - Fracture Mechanics

Course Description
Theoretical concepts concerning the fracture and failure of brittle and ductile materials. Orowan and Griffith approaches to strength. Determination of stress intensity factors using compliance method, weight function method, and numerical methods with conservation laws. Cohesive zone models, fracture toughness, crack growth stability, and plasticity. Prerequisites: Civil and Environmental Engineering 520, or instructor consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE623 - Mechanics of Composite Materials

Course Description
Theory and application of effective medium, or homogenization, theories to predict macroscopic properties of composite materials based on microstructural characterizations. Effective elasticity, thermal expansion, moisture swelling, and transport properties, among others, are presented along with associated bounds such as Voigt/Reuss and Hashin-Shtrikman. Specific theories include Eshelby, Mori-Tanaka, Kuster-Toksoz, self-consistent, generalized self-consistent, differential method, and composite sphere and cylinder assemblages. Tensor-to-matrix mappings, orientational averaging, and texture analysis. Composite laminated plates, environmentally induced stresses, and failure theories. Prerequisite: Civil and Environmental Engineering 520 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE625 - Intermediate Dynamics: Dynamics of Very High Dimensional Systems

Course Description
Dynamics of very high dimensional systems. Linear and nonlinear dynamics of a string as a prototypical example. Equations of motion of a nonlinear beam with tension. Convergence of a modal series. Self-adjoint and non-self-adjoint systems. Orthogonality of modes. Nonlinear normal modes. Derivation of Lagrange's equations from Hamilton's Principle including the effects of constraints. Normal forms of kinetic and potential energy. Component modal analysis. Asymptotic modal analysis.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME541 INTERMEDIATE DYNAMICS

CEE626 - Energy Flow and Wave Propagation in Elastic Solids

Course Description
Derivation of equations for wave motion in simple structural shapes: strings, longitudinal rods, beams and membranes, plates and shells. Solution techniques, analysis of systems behavior. Topics covered include: nondispersive and dispersive waves, multiple wave types (dilational, distortion), group velocity, impedance concepts including driving point impedances and moment impedances. Power and energy for different cases of wave propagation. Prerequisites: Engineering 244L and Mathematics 353 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME543 ENERGY FLOW & WAVE PROPAGATION

CEE627 - Linear System Theory

Course Description
Construction of continuous and discrete-time state space models for engineering systems, and linearization of nonlinear models. Applications of linear operator theory to system analysis. Dynamics of continuous and discrete-time linear state space systems, including time-varying systems. Lyapunov stability theory. Realization theory, including notion of controllability and observability, canonical forms, minimal realizations, and balanced realizations. Design of linear feedback controllers and dynamic observers, featuring both pole placement and linear quadratic techniques. Introduction to stochastic control and filtering. Prerequisites: Electrical and Computer Engineering 382 or Mecahnical Engineering 344, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME627 LINEAR SYSTEM THEORY

CEE628 - Uncertainty Quantification in Computational Science and Engineering

Course Description
This course is concerned with the modeling, identification, and propagation of model and parametric uncertainties in computational science and engineering. The aim is to provide decision makers, engineers and scientists with predictions endowed with measures of confidence. In practice, the randomness introduced within the modeling framework can reflect intrinsic stochasticity or some lack of knowledge. The covered material finds applications in a broad range of fields, from the modeling of materials and complex systems to robust design optimization. The course is oriented towards the understanding and implementation of state-of-the-art techniques for applied or fundamental research projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE630 - Nonlinear Finite Element Analysis

Course Description
Formulation and solution of nonlinear initial/boundary value problems using the finite element method. Systems include nonlinear heat conduction/diffusion, geometrically nonlinear solid and structural mechanics applications, and materially nonlinear systems (for example, elastoplasticity). Emphasis on development of variational principles for nonlinear problems, finite element discretization, and equation-solving strategies for discrete nonlinear equation systems. Topics include: Newton-Raphson techniques, quasi-Newton iteration schemes, solution of nonlinear transient problems, and treatment of constraints in a nonlinear framework. An independent project, proposed by the student, is required. Prerequisite: Civil and Environmental Engineering 530/Mechanical Engineering 524, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME525 NONLIN FIN ELEMENT ANALY

CEE642 - Environmental Geomechanics

Course Description
The course addresses engineered and natural situations, where mechanical and hydraulic properties of soils and rocks depend on environmental (thermal chemical, biological) processes. Experimental findings are reviewed, and modeling of coupled thermo-mechanical, chemo-mechanical technologies are reviewed.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE643 - Environmental and Engineering Geophysics

Course Description
Use of geophysical methods for solving engineering and environmental problems. Theoretical frameworks, techniques, and relevant case histories as applied to engineering and environmental problems (including groundwater evaluation and protection, siting of landfills, chemical waste disposals, roads assessments, foundations investigations for structures, liquefaction and earthquake risk assessment). Introduction to theory of elasticity and wave propagation in elastic and poroelastic media, electrical and electromagnetic methods, and ground penetrating radar technology. Prerequisite: Mathematics 353 or Physics 152L, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE647 - Buckling of Engineering Structures

Course Description
An introduction to the underlying concepts of elastic stability and buckling, development of differential equation and energy approaches, buckling of common engineering components including link models, struts, frames, plates, and shells. Consideration will also be given to inelastic behavior, postbuckling, and design implications.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME527 BUCKLING EGR STRUCTURES

CEE649 - Structural Engineering Project Management

Course Description
Apply project management tools and skills to a structural engineering design project. Implement changes in schedule, budget, and changing client and/or regulatory climate. Work with a design team of undergraduate students. Prerequisites: not open to students who have had Civil and Environmental Engineering 429, 469, or 679. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE661L - Environmental Molecular Biotechnology (GE, MC)

Course Description
Principles of genetics and recombinant DNA for environmental systems. Applications to include genetic engineering for bioremediation, DGGE, FISH, micro-arrays and biosensors. Laboratory exercises to include DNA isolation, amplification, manipulation and analysis. Prerequisites: Civil and Environmental Engineering 462L, Biology 20, Biology 201L, or graduate standing, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME565L ENV MOL BIOTECHNOLOGY

CEE666 - Aquatic Geochemistry

Course Description
Geochemistry of the water-solid interface of soils, minerals, and particles in earth systems. Topics will cover the chemical composition of soils, geochemical specalation, mineral weathering and stability, sorption and ion exchange, soil redox processes, and chemical kinetics at environmental surfaces. Prerequisites: CEE 461L or CEE 561L/ENVIRON 542L or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON666 AQUATIC GEOCHEM

CEE667 - Chemical Transformation of Environmental Contaminants

Course Description
Mechanisms and principles underlying organic contaminant transformations in the ambient environment. Topics include hydrolysis, oxidation/reduction, direct and indirect photolysis, and reactions with disinfectant chemicals. Reactions will be considered in context of both natural (e.g. surface water and cloudwater) and engineered (e.g. drinking water, wastewater, and groundwater remediation) systems. Approaches will include both qualitative (reaction mechanism and product identification) as well as quantitative (reaction kinetics and stoichiometry) aspects of environmental reaction chemistry. Prerequisites: CEE 563/ENVIRON 540 or one semester of organic chemistry.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON667 CHEM TRANSFORM OF ENV CONTAM

CEE675 - Introduction to the Physical Principles of Remote Sensing of the Environment

Course Description
The course provides an overview of the radiative transfer principles used in remote-sensing across the electromagnetic spectrum using both passive and active sensors. Special focus is placed on the process that leads from theory to the development of retrieval algorithms for satellite-based sensors, including post-processing of raw observations and uncertainty analysis. Students carry on three hands-on projects (Visible and Thermal Infrared, Active Microwave, and Passive Microwave). Background in at least one of the following disciplines is desirable: radiation transfer, signal processing, and environmental physics (Hydrology, Geology, Geophysics, Plant Biophysics, Soil Physics). Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE679 - Environmental Engineering Project Management

Course Description
Apply project management tools and skills to an environmental engineering design project. Implement changes in schedule, budget, and changing client and/or regulatory climate. Work with a design team of undergraduate students. Consent of instructor required. Prerequisites: not open to students who have had Civil and Environmental Engineering 429, 469, or 649.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CEE683 - Groundwater Hydrology and Contaminant Transport

Course Description
Review of surface hydrology and its interaction with groundwater. The nature of porous media, hydraulic conductivity, and permeability. General hydrodynamic equations of flow in isotropic and anisotropic media. Water quality standards and contaminant transport processes: advective-dispersive equation for solute transport in saturated porous media. Analytical and numerical methods, selected computer applications. Deterministic versus stochastic models. Applications: leachate from sanitary landfills, industrial lagoons and ponds, subsurface wastewater injection, monitoring of groundwater contamination. Conjunctive surface-subsurface models. Prerequisite: Civil and Environmental Engineering 301L, or graduate standing, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CEE684 - Physical Hydrology and Hydrometeorology

Course Description
The objective of this course is to introduce and familiarize graduate students with the fundamental physical processes in Hydrology and Hydrometeorology that control and modulate the pathways and transformations of water in the environment. The content of the course will be strongly oriented toward providing students with a specific basis for quantitative analysis of the terrestrial water cycle including land-atmosphere interactions and clouds and precipitation (rain and snow) processes. The course should be of interest to undergraduate and graduate students interested in Environmental Science and Engineering, and Atmospheric and Earth Sciences.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CEE688 - Turbulence 1

Course Description
This is an introductory course on the subject of turbulence in fluids. The focus is on understanding the fundamental physical processes and mechanisms governing the behavior of turbulent flows. The course covers the following - overview of physical and mathematical properties of Navier-Stokes equation; kinematics, dynamics and energetics of turbulent flows; Kolmogorov theories of turbulence; Richardson energy cascade; wall-bounded turbulent flows; particle dispersion, clustering and collisions in turbulent flows. Prerequisite: ((CEE 301L or ME 336L) and Mathematics 353) or graduate standing. Recommended prerequisite: an introductory course on fluid mechanics, and a course on differential equations.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME634 TURBULENCE 1

CEE690 - Advanced Topics in Civil and Environmental Engineering

Course Description
A course on an advanced topic within the civil and environmental engineering department.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

CEE691 - Independent Study: Advanced Topics in Civil and Environmental Engineering

Course Description
Study arranged on an advanced subject relating to programs within the civil and environmental engineering department tailored to fit the requirements of individuals or small groups. Consent of director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
3

CEE692 - Independent Study: Advanced Topics in Civil and Environmental Engineering

Course Description
Study arranged on an advanced subject relating to programs within the civil and environmental engineering department tailored to fit the requirements of individuals or small groups. Consent of director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
3

CEE701 - Graduate Colloquium

Course Description
Current topics in civil and environmental engineering theory and practice. Weekly seminar series.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
0

Max Units:
0

CEE702 - Graduate Colloquium

Course Description
Current topics in civil and environmental engineering theory and practice. Weekly seminar series.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

CEE761 - Hydrologic and Environmental Data Analysis

Course Description
Course will focus on acquisition of skills necessary to extract information from observations of hydrological and environmental processes, connect the extracted information with the physical processes generating the data, and estimate physical quantities at ungauged location/times. Emphasis on process understanding via data analysis techniques. Applications used as a way to understand the general concepts, with examples drawn from water science. Prerequisites: Basic computer skills, Algebra, Calculus are required. Experience with computational software (e.g. Matlab or R) is helpful but not required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON722 HYDROLOGIC DATA ANALYSIS, ECS722 HYDROLOGIC DATA ANALYSIS

CEE780 - Internship

Course Description
Student gains practical experience in civil and environmental engineering by taking a job in industry, and writes a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

CEE890 - Advanced Topics in Civil & Environmental Engineering

Course Description
A course on an advanced topic within the civil and environmental engineering department.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

CEE891 - Independent Study: Advanced Topics in CEE

Course Description
Special individual readings in a specific area of study in civil and environmental engineering. Approval of director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

CEE892 - Independent Study: Advanced Topics in CEE

Course Description
Special individual readings in a specific area of study in civil and environmental engineering. Approval of director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

CELLBIO658 - Structural Biochemistry I

Course Description
Principles of modern structural biology. Protein-nucleic acid recognition, enzymatic reactions, viruses, immunoglobulins, signal transduction, and structure-based drug design described in terms of the atomic properties of biological macromolecules. Discussion of methods of structure determination with particular emphasis on macromolecular X-ray crystallography NMR methods, homology modeling, and bioinformatics. Students use molecular graphics tutorials and Internet databases to view and analyze structures. Prerequisites: organic chemistry and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM658 STRUCTURAL BIOCHEMISTRY I, CMB658 STRUCTURAL BIOCHEMISTRY I, UPGEN658 STRUCTURAL BIOCHEMISTRY I, SBB658 STRUCTURAL BIOCHEMISTRY I, CBB658 STRUCTURAL BIOCHEMISTRY I

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CELLBIO659 - Structural Biochemistry II

Course Description
Continuation of Biochemistry 658. Structure/function analysis of proteins as enzymes, multiple ligand binding, protein folding and stability, allostery, protein-protein interactions. Prerequisites: Biochemistry 658, organic chemistry, physical chemistry, and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM659 STRUCTURAL BIOCHEMISTRY II, CBB659 STRUCTURAL BIOCHEMISTRY II, SBB659 STRUCTURAL BIOCHEMISTRY II, UPGEN659 STRUCTURAL BIOCHEMISTRY II

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CELLBIO668 - RNA Biology: Co-Transcriptional and Post-Transcriptional Control of Gene Expression

Course Description
Explores various aspects of RNA biology and function. Topics will include splicing, translation, RNA: Protein interactions, non-coding RNAs, RNA modifications, viral RNA regulation, RNA structure-function relationships, and RNA-targeted drug discovery. Students will also learn about the major techniques used in RNA research, including in vitro and in vivo methods for understanding global RNA regulation. The format will be a combination of weekly lectures which will also include discussion of primary literature. Students will be evaluated based on their participation and performance during in-class presentations. Students will also write a short mock research grant on a topic of their choosing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOCHEM668 RNA BIOLOGY, UPGEN668 RNA BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CELLBIO680 - Molecular Cardiovascular Biology

Course Description
Overview of molecular mechanisms of cardiovascular biology and pathology. Various topics including the molecular basis of atherosclerosis, hypertension, myocardial hypertrophy, arrhythmias, cardiovascular metabolic disorders, angiogenesis, stem cells, and tissue regeneration in the cardiovascular system.

Grading Basis
Credit / No Credit

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
PHARM680 MOLECULAR CV BIOLOGY

CELLBIO701 - Human Structure and Function

Course Description
Core course of preclinical curriculum presents scientific principles underlying structure and function of the normal human body. Focuses on gross anatomy, microscopic anatomy, and physiology of nine organ systems providing the foundation for the practice of medicine. Registration of non-Pathologist's Assistant students requires permission of Course Director.

Grading Basis
Graded

Units

Min Units:
12

Max Units:
12

CELLBIO710 - Papers and Grant Writing Workshop

Course Description
Introduction to grant and fellowship writing; writing assignment of two proposal topics; evaluation and critique of proposal by fellow students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROBIO710 SCIENTIFIC WRITING, MOLCAN710 SCIENTIFIC WRITING, PHARM710 SCIENTIFIC WRITING

CELLBIO730 - Stem Cell Course

Course Description
The course is designed for first-year graduate students to learn the fundamentals of stem cell biology and to gain familiarity with current research in the field. The course will be presented in a lecture and discussion format based on the primary literature. Topics include: stem cell concepts, methodologies for stem cell research, embryonic stem cells, adult stem cells, cloning and stem cell reprogramming and clinical applications of stem cell research. Prerequisites: undergraduate level cell biology, molecular biology, and genetics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MOLCAN730 STEM CELL COURSE, PHARM730 STEM CELL COURSE, DSCB720 STEM CELL COURSE

CELLBIO761 - Cellular Signaling Module I: GPCR Signaling and Disease

Course Description
This module will cover the basic mechanism of signal transduction through G protein coupled receptors (GPCR) and how they control a wide array of biological functions from vision to reproduction and are the largest targets of therapeutic interventions. How new concepts in our understanding of their signal transduction mechanisms is leading to the development of new and improve therapies for various disorder.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOCHEM761 CELLULAR SIGNALING MODULE I, MOLCAN761 CELLULAR SIGNALING MODULE I, PHARM761 CELLULAR SIGNALING MODULE I

CELLBIO762 - Cellular Signaling Module II: Intracellular Signaling and Disease

Course Description
This module will cover how ion channels and intracellular nuclear receptors control cellular functions mediated through transcription or calcium signaling to regulate physiological processes in health and disease.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOCHEM762 CELLULAR SIGNALING MODULE II, MOLCAN762 CELLULAR SIGNALING MODULE II, PHARM762 CELLULAR SIGNALING MODULE II

CELLBIO763 - Cellular Signaling Module III: Growth Factor Pathway in Development and Disease

Course Description
The focus of this module is on signaling pathways induced by extracellular factors that regulate growth, survival, and development, and their deregulation in disease including cancer. Among the pathways covered are those regulated by ligand-activated Receptor Tyrosine Kinases, Wnt/beta-catenin signaling, Notch signaling, and Hedgehog signaling.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOCHEM763 CELLULAR SIGNALING MODULE III, MOLCAN763 CELLULAR SIGNALING MODULE III, PHARM763 CELLULAR SIGNALING MODULE III

CELLBIO791 - Research in Cell Biology

Course Description
Guided independent study and research experience in cell biology. Nature of topic to be decided by individual arrangement with faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
16

CELLBIO830 - Developmental Biology Colloquium

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CELLBIO899 - Internship

Course Description
Student gains practical experience related to research project by completing an internship. An internship can be completed if it allows them to gain practical experience in a work environment related to their academic training and enhances their overall academic experience. At the completion of the internship submits a report about this experience to their advisor. Requires prior consent from the student's advisor and from the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

CHEM506 - Biomolecular Mass Spectrometry

Course Description
Advanced topics in the mass spectral characterization of biopolymers with an emphasis on protein and DNA analysis. Fundamental and practical aspects of the ionization processes and the instrumentation associated with MALDI- and ESI-Mass spectrometry discussed along with applications of these techniques to structural problems in chemistry and biochemistry. Prerequisite: Chemistry 501 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
2

Max Units:
2

CHEM511 - Chemistry of Biomolecular Interactions

Course Description
Chemistry of the noncovalent interactions governing biological systems. Topics include: review of biomacromolecules; chemical principles of non-covalent interactions and the use of model systems; experimental methods to determine binding interactions; interactions responsible for molecular recognition in biological systems; and applications in signal regulation. Recommended precursor to Chemistry 518.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CHEM517 - Molecules in Life and Disease

Course Description
Molecules are an essential component of life as they dictate our development, enable adaptation to our environment, and carry our thoughts. This course explores the roles of molecules in normal physiological functions and disease states ranging from genetic disorders to those caused by deadly toxins, such as anthraxin toxin. Case studies on bacterial pathogenesis, drug resistance and modern drug development are among the topics that will be discussed. Prerequisites: Organic Chemistry and Introductory Biology or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

CHEM518 - Chemical Biology

Course Description

The application of chemical concepts and methods to solving problems in molecular and cell biology, with emphasis on the use of small molecules to elucidate and control information transfer in biological systems. Provides relevant background on both useful chemical tools and new biological targets.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

4

Max Units:

4

CHEM521 - Inorganic Chemistry

Course Description

Bonding and spectroscopy, reactions, transition metal chemistry, main group chemistry, organometallics/catalysis, and solid state.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

4

Max Units:

4

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum

CHEM531 - Organic Chemistry

Course Description

Bonding and structure, stereochemistry, conformational analysis, substitution, addition, and elimination reactions, carbon reactive intermediates, concerted reactions, photochemistry, carbon alkylation, carbonyl addition nucleophilic substitution, electrophilic additions, reduction, cycloadditions, rearrangements, main group organometallics, oxidation.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

4

Max Units:

4

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum

CHEM532 - Organic Reactions

Course Description

Highlights strategic operations that enable selective synthesis of small molecules, including organic ligands, natural products, and molecular probes. Topics include chemical synthesis and retrosynthetic analysis; arrow-pushing mechanisms of polar, radical, transition metal-mediated and pericyclic reactions; protecting groups, oxidation, reduction, enolate reactivity; stereoselective reactions and conformational analysis; cross-coupling transformations.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

4

Max Units:

4

CHEM533 - Nuclear Magnetic Resonance

Course Description
Structural elucidation of organic and inorganic compounds by NMR. Fundamentals of data acquisition (pulse sequences, detection), multidimensional techniques, study of dynamic processes and their application to the determination of structure.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CHEM535 - Organic Synthesis

Course Description
Application of organic reactions to the synthesis of structurally and biologically interesting compounds. Topics include synthetic design, retrosynthetic analysis, synthetic methods, and total syntheses of natural products. Prerequisite: Chemistry 532 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NS - (NS) Natural Sciences

CHEM536 - Bioorganic Chemistry

Course Description
Basic enzymology, mechanisms of enzymatic reactions, cofactors, oxidoreductases, C1 chemistry, carbon-carbon bond formation, carboxylation/decarboxylation, heme, pyridoxal enzymes, thiamine enzymes. Prerequisite: Chemistry 331 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BIOCHEM536 BIOORGANIC CHEMISTRY

CHEM538 - Organometallic Chemistry and Catalysis

Course Description
Introduction to the structure and bonding of organometallic and coordination complexes, stressing the origin of metal-ligand interactions from a molecular orbital theory perspective. Elementary reactions of transition metal complexes and their application to organic synthesis, with special emphasis on catalytic reactions. General concepts of catalysis and the advantages and benefits of catalytic systems.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

CHEM539 - Polymer Chemistry

Course Description
This course provides the fundamental bases for understanding and comprehending the basic principles associated with the synthesis of polymers using a number of traditional and contemporary polymerization techniques with an emphasis on the mechanisms, kinetics, stereochemistry and resulting properties of the polymers. Students are expected to have a strong foundation in mathematics, physics and chemistry. Recommended prerequisites: Organic Chemistry, Thermodynamics

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

CHEM541 - Quantum Chemistry

Course Description
Foundations and approximate methods in quantum chemistry, with an emphasis on their applications to molecular structure and modeling.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

CHEM542 - Quantum Mechanics

Course Description
Special emphasis on chemical applications. Topics include: linear algebra, the uncertainty relations, angular momentum, perturbation theory, time-dependent phenomena, molecules in electromagnetic fields, group theory, and electron correlation. Prerequisite: Chemistry 541 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

CHEM543 - Statistical Thermodynamics

Course Description
Introduction to statistical thermodynamics, with an emphasis on ideal systems and selected model approaches to more complex systems, for example, lattice models.

Grading Basis
Graded

Units

Min Units:
2

Max Units:
2

CHEM544 - Statistical Mechanics

Course Description
Fundamentals of quantum and classical statistical mechanics using the ensemble approach. Introduction of modern techniques and applications including the renormalization group treatment of phase transitions and linear response theory of time-dependent statistical mechanics. Prerequisite: Chemistry 543 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

CHEM548 - Solid-State and Materials Chemistry

Course Description
Introduction to the structure, physical, and electronic properties of solid-state materials.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CHEM590 - Special Topics in Chemistry

Course Description
Special topics in chemistry and chemistry-related areas. Content varies by instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
4

CHEM601 - Biosensors

Course Description
Theory and applications of biosensors. Basic principles of interactions between analytes and bioreceptors and various transduction techniques: optical, electrochemical, ion-selective electrode-based, voltametric, conductometric, and mass-sensitive techniques as well as novel nanotechnology-based biosensing systems including nanosensors, plasmonic nanoprobes, quantum dots, carbon nanotubes, molecular beacons, and molecular sentinel systems. Applications in chemical, environmental, biological and medical sensing. Paired with Biomedical Engineering 567. Prerequisites: senior or graduate standing or instructor's consent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CHEM611 - Foundations of Nanoscale Science and Technology

Course Description
This course is the introductory course for the Graduate Certificate Program in Nanoscience (GPNANO) and is designed to introduce students to the interdisciplinary aspects of nanoscience by integrating important components of the broad research field together. This integrated approach will cross the traditional disciplines of biology, chemistry, electrical & computer engineering, computer science, and physics. Fundamental properties of materials at the nanoscale, synthesis of nanoparticles, characterization tools, and self-assembly. Prerequisites: Physics 152L and Chemistry 101DL or instructor approval.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE511 FOUNDATIONS NANOSCALE SCI/TECH, NANOSCI511 FOUNDATIONS NANOSCALE SCI/TECH

CHEM630 - Advances in Photonics (GE, IM)

Course Description
Overview of photonics techniques and their applications. The course will enhance students' understanding and knowledge of advanced techniques and introduce them to a variety of applications in photonics, the science and technology associated with interactions of light with matter. Photonics techniques include: advanced luminescence, Raman and SERS, optical coherence, advanced microscopy, near-field and confocal methods, remote sensing, and optical biosensing. Applications include: environmental sensing, medical diagnostics, assays using optical detection, optics in multispectral imaging, photonics and solar cells, and nanophotonics. Prerequisite: senior or graduate standing in BME or Chemistry.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME555 ADVANCES IN PHOTONICS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CHEM690 - Special Topics in Chemistry

Course Description
Special topics in chemistry and chemistry related areas. Content varies by instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
4

CHEM701S - Research Orientation Seminar

Course Description

A survey of departmental research. Required of all entering graduate students in chemistry. Consent of director of graduate studies required.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

CHEM801 - Research

Course Description

Instruction in methods used in the investigation of original problems. Individual work and conferences. 1 to 6 units each.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

6

CHEM995 - Graduate Training Internship

Course Description

Designed to allow graduate student in Chemistry to engage either full- or part-time in internship lab work and doctoral study with external agencies and institutions for credit, when determined necessary for degree completion. Laboratory work and analysis can be conducted at external institution with permission of immediate faculty supervisor. Permission of instructor required.

Grading Basis

Credit / No Credit

Units

Min Units:

1

Max Units:

1

CHEM590-1 - Special Topics in Chemistry

Course Description

Special topics in chemistry and chemistry-related areas. Content varies by instructor.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

2

Max Units:

2

CHEM990-2 - Special Topics in Inorganic Chemistry

Course Description

Advanced topics and recent developments in inorganic chemistry.

Grading Basis

Graded

Units

Min Units:
1

Max Units:
4

CHEM990-3 - Special Topics in Organic Chemistry

Course Description
Advanced topics and recent developments in organic chemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
4

CHEM990-4 - Special Topics in Physical Chemistry

Course Description
Advanced topics and recent developments in physical chemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
4

CHEM990-5 - Special Topics in Professional Development

Course Description
Representative topics include ethics, communication (oral and written), preparation for career in college teaching, preparation for a career in chemical industry, preparation for career in government.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
4

CHILDPOL520S - Equity in Early Childhood Programs and Policies

Course Description
This course will explore contemporary theories and empirical research that address issues of equity and early childhood development from birth to age 8. We will examine factors related to individuals and systems (e.g., child care, public health, housing, workforce, social services) that impact early childhood development. Students will critically consider the developmental science that has informed early childhood policies and programs; the social, political and economic forces that shape the study of young children and contributed to developmental trajectories that benefit some children while disadvantaging others; the changing roles of families; and the implications of these policies.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL520S EQUITY-EARLY CHILDHOOD POLICY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

CHILDPOL532S - Community-Based Research on Early Childhood Policy and Practice

Course Description
This course provides hands-on experience consulting with early childhood organizations, researching relevant topics, and communicating findings with clear, actionable policy recommendations. Small groups of graduate and advanced undergraduate students will partner with a community organization to answer real-world questions through research and policy analysis. Topics will be proposed by the organization, with students responsible for the approach. Methodology may include literature review, policy review, and collection/analysis of quantitative or qualitative data. Final products will include both written and oral presentation of findings and recommendations tailored to the client.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL532S EARLY CHILD POLICY & PRACTICE

General Education Curriculum Codes
R - (R) Research, SS - (SS) Social Sciences

CHILDPOL590 - Advanced Child Policy Research Topics

Course Description
Topics vary but pertain to the development and social and economic well-being of children and their families. Interdisciplinary in nature and drawing material from disciplines such as sociology, psychology, public policy, economics, and education. An elective course for students pursuing Child Policy Research certificate.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CHILDPOL590S - Advanced Child Policy Research Seminar Topics

Course Description
Seminar version of Child Policy Research 590.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CHINESE781 - Chinese for Graduate Students

Course Description
Completion of a regular Chinese class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Chinese as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CHINESE782 - Chinese for Graduate Students

Course Description
Completion of a regular Chinese class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Chinese as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CHINESE791 - Independent Study

Course Description
Individual study of language for conducting research involving sources written or spoken in the language. Students have to submit a proposal describing the purported research, types of sources to be analyzed, and kinds of language knowledge or skills they need to be equipped with. Consent of instructor and director of undergraduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CINE502S - Analog Filmmaking and Darkroom Techniques

Course Description
Investigation of experimental cinematographic techniques and darkroom processes. Exercises and lab experiments to inform a final project. Suggested prerequisite: Cinematic Arts 356S.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS502S ANALOG FILMMAKING AND DARKROOM, ARTSVIS502S ANALOG FILMMAKING AND DARKROOM, DOCST502S ANALOG FILMMAKING AND DARKROOM

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CINE511 - Documentary and East Asian Cultures

Course Description

Focus on documentary films from various regions in East Asia, including China, Taiwan, Korea and Japan, studying the specific historical and social context of each while attending to their interconnected histories and cultures. Emphasis on the ethical implications of documentary in terms of its deployment of visual-audio apparatus to represent different groups of people and beliefs, values and conflicts, both intra- and inter-regionally in East Asia. Special attention paid to the aesthetics and politics of the documentary form in terms of both its production of meanings and contexts of reception.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AMES511 DOCUMENTARY/EAST ASIAN CULTURE, DOCST511 DOCUMENTARY/EAST ASIAN CULTURE, ICS513 DOCUMENTARY/EAST ASIAN CULTURE

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CINE540S - Memory and Documentary Cinema in Latin America

Course Description

Course focuses on work of several leading Latin American filmmakers from Brazil, Chile, Argentina, and Cuba. Explores problems such as construction of memory in the wake of repressive dictatorships, relationship between revolutionary imagination and urban decay in present day Cuba, cinema's potential as a tool for cross-cultural explorations of memory and time, including relationship between past and present and our understanding of 'contemporary.'

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ROMST540S MEMORY/DOC CINEMA LATIN AMER, VMS540S MEMORY/DOC CINEMA LATIN AMER, DOCST540S MEMORY/DOC CINEMA LATIN AMER, LIT544S MEMORY/DOC CINEMA LATIN AMER, LATAMER540S MEMORY/DOC CINEMA LATIN AMER

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CINE545 - Black Camera: Still and Moving Images

Course Description

This course interrogates still and moving images by and about people of African descent. Students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

VMS545 BLACK CAMERA, AAAS539 BLACK CAMERA, ARTHIST539 BLACK CAMERA

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

CINE609S - Transpacific and Global Asia/America: Connecting Divided Histories and Knowledges

Course Description
This theory and methodology course introduces texts in Asian American studies and global and critical Asian Studies through the oceanic and archipelagic lens of the transpacific. Explores historical and disciplinary fault lines among Asian Studies, Asian/American Studies through higher ed, as well as entangled and divided histories of Asia and the Americas. Navigates legacies of colonial, cold war, and postcolonial histories between Asia and the Americas. Centers power dynamics of knowledge formation, translation, circulation across divides in history, journalism, academia, literature, films, digital and art works, gaming, community engagement, museums and archives, and law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES609S TRANSPACIFIC ASIA/AMERICA, AADS609S TRANSPACIFIC ASIA/AMERICA, CULANTH609S TRANSPACIFIC ASIA/AMERICA, GSF609S TRANSPACIFIC ASIA/AMERICA, ARTHIST609S TRANSPACIFIC ASIA/AMERICA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

CINE610S - Basic Concepts in Cinema Studies

Course Description
Review of theory, methodology, and debates in study of film under three rubrics: mode of production or industry; apparatus or technologies of cinematic experience; text or the network of filmic systems (narrative, image, sound). Key concepts and their genealogies with the field: gaze theory, apparatus theory, suture, indexicality, color, continuity.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT610S BASIC CONCEPTS IN CINEMA, VMS610S BASIC CONCEPTS IN CINEMA

General Education Curriculum Codes
(ALP) Arts, Lit & Performance

CINE612S - Theories of the Image: The Image in Walter Benjamin

Course Description
Returning to Walter Benjamin's Art Work essay and its various sources and revisions, this course will discuss recent engagements with Benjamin's work in cinema, photography, and visual and media studies and will attempt to understand the role and functions of the faculty he coins 'the mimetic' in modern culture. Readings will be drawn from the English translation of Benjamin's Selected Writings, volumes 1-4, and including his work on photography, history, surrealism and his reviews of writers such as Charles Baudelaire. Readings will also include some of Benjamin's own primary sources, such as the writings of Kracauer as well contemporary discussions of Benjamin's work in academic journals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT612S THEORIES OF THE IMAGE, GERMAN512S THEORIES OF THE IMAGE, ROMST612S THEORIES OF THE IMAGE, VMS612S THEORIES OF THE IMAGE, CULANTH500S THEORIES OF THE IMAGE

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CINE618S - Theories of the Visual

Course Description
Examines the 'visual' as concept of major concern that traverses the debates of the modern and postmodern periods. Expands from the technological (painting, photography, cinema, television, and computation) to the theoretical and philosophical interpretation of visual culture. Examines major periods: from philosophical critique of visuality in 19th and early 20th c., to the height of cultural theory and criticism up until the 1970s; from the late 20th c. to the contemporary period that includes debates that expand our understanding of visual experience. Ends with introducing work that aims at decentralizing Western thought in the debate.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT618S THEORIES OF THE VISUAL, ARTSVIS618S THEORIES OF THE VISUAL, CMAC618S THEORIES OF THE VISUAL, ROMST618S THEORIES OF THE VISUAL, VMS618S THEORIES OF THE VISUAL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CINE622S - Film-philosophers/Film-makers

Course Description
Examines intersections between film, critical theory, and continental philosophy, from standpoint of spectatorship. Focuses on different approaches to film theory from a philosophical prism, and on different philosophers addressing film as a mediated visual interpretation of reality, the world, our own bodies, and societies within which we reside. Addresses film-making as an act of philosophical thought—of thinking about the world and representing subject's position within the world. Topics include, existential phenomenology, Deleuzian metaphysics, feminism, semiotics, political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT620S FILM-PHILOSOPHERS-FILM-MAKERS, VMS622S FILM-PHILOSOPHERS-FILM-MAKERS, ENGLISH620S FILM-PHILOSOPHERS-FILM-MAKERS, DOCST620S FILM-PHILOSOPHERS-FILM-MAKERS

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CINE632 - Questions of National Cinemas

Course Description
Films, documentaries, television series, and soap operas produced in mainland China in the post-Mao era. Topics include the history and aesthetics of the cinema, soap operas as the new forum for public debates on popular culture, the emerging film criticism in China, the relationship of politics and form in postrevolutionary aesthetics. (Same as AMES 431 but requires extra assignments.) Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES631 NATIONAL CINEMAS, LIT632 NATIONAL CINEMAS, VMS632 NATIONAL CINEMAS

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

CINE634S - Producing Docu-Fiction

Course Description
Investigation of hybrid, genre-defying films that question traditional definitions of documentary and fiction. Emphasis on experimental forms, documentary reenactment, mockumentary and dramatized 'true stories.' Exploration of both documentary and fiction production techniques, culminating in the production of a final video project. Same as Visual and Media Studies 340S but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS634S PRODUCING DOCU-FICTION

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

CINE635S - 16mm Film Production

Course Description
Hands-on experience with 16mm motion picture film and photography. In-depth exploration of the techniques and aesthetics of film production, including basic screen writing, lighting, story telling, and editing. Each student will produce an individual 16mm film. Same as Visual and Media Studies 362S but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS635S 16MM FILM PRODUCTION

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

CINE639S - Expanded Cinema: Cinema Outside the Movie Theater

Course Description
This project-based course will explore moving image installation practices beyond the movie theater including alternative public spaces, devices, museums, white cubes and back boxes. The course will simultaneously examine relevant artworks in the context of their diverse histories and attendant theories, from early cinema devices, through works termed as Expanded Cinema around the 1970s, to current new media manifestations. Students will focus on developing moving image installation projects of their own, to be realized at various campus locations. Open to seniors and graduate students. Prerequisite: Two 200-level or above photography or film production classes.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS640S EXPANDED CINEMA, VMS640S EXPANDED CINEMA, DOCST640S EXPANDED CINEMA, LIT545S EXPANDED CINEMA

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CINE642 - Citizen Godard

Course Description
This course explores the complex interactions of poetics and politics in the films of Jean-Luc Godard, from the French New Wave, through the experimental phase of the Dziga Vertov group, to the recent Histoire(s) du cinéma and Film socialisme. Drawing on a wide range of literary and philosophical texts (Merleau-Ponty, Althusser, Deleuze, Rancière), this seminar situates Godard's work within its intellectual and political contexts, investigating how developments in French culture and thought since 1950 have been reflected in - and sometimes anticipated by - Godard's films. In English with preceptorial available in French.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH510 CITIZEN GODARD, VMS552 CITIZEN GODARD, LIT510 CITIZEN GODARD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CINE643SL - Narrative Practice in Global Art Cinema

Course Description
Advanced in-depth examination of alternative narrative and doc-fiction practices emerging from national cinemas around the world. Intended for advanced undergraduate and graduate students with prior production experience. Screenings and readings related to significant national cinema movements and practitioners will inform production exercises, writing assignments and a final moving image project.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS641SL GLOBAL ART CINEMA, VMS641SL GLOBAL ART CINEMA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

CINE644S - Third Cinema

Course Description
Exploration of the geopolitics of situatedness and distance as they refer to the film industry, investigating processes of production, distribution, and reception of Hollywood, Third World, and diasporic films, and studying classical and artisanal modes of production in film. Addresses questions of authorship and embodiment; human rights and interventionist filmmaking as they refer themselves to human states of liminality, global movements of populations and capital. Traces the experience of globalization, urbanization, alienation, violence, nostalgia for nature and homeland as represented in the filmic image.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS530S THIRD CINEMA, LIT613S THIRD CINEMA, ICS613S THIRD CINEMA, LATAMER613S THIRD CINEMA, VMS611S THIRD CINEMA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance, (SS) Social Sciences

CINE650S - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Graduate students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS650S BLACK CAMERA, AAAS531S BLACK CAMERA, ARTHIST650S BLACK CAMERA, PHOTO650S BLACK CAMERA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

CINE685S - Visiting Filmmaker Master Course: Special Topics

Course Description
Intensive production courses with visiting filmmaker. Topics vary by semester. May be taken twice.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS685S VISITING FILMMAKER MASTER CRS

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

CINE690S - Special Topics in Cinematic Arts

Course Description
Subjects, areas or themes related to Cinematic Arts.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CINE691 - Independent Study

Course Description
Independent Study

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

CINE701S - Experimental Filmmaking

Course Description
Graduate level course covering the history of avant-garde in film and video combined with production exercises. This is a graduate level version of Experimental Filmmaking. The graduate students will be required to complete more advanced assignments and additional projects related to experimental filmmaking.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS729S EXPERIMENTAL FILMMAKING

CINE702S - Producing Docu-Fiction

Course Description
Investigation of hybrid, genre-defying films that question traditional definitions of documentary and fiction. Emphasis on experimental forms, documentary reenactment, mockumentary and dramatized 'true stories.' Exploration of both documentary and fiction production techniques, culminating in the production of a final video. Graduate-level assignments and advanced project work expected and developed in consultation with the professor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS740S PRODUCING DOCU-FICTION, VMS740S PRODUCING DOCU-FICTION

CINE703S - Writing the Short Film

Course Description
In-depth study of the short format movie. Development of short film concept and script, including pre-production, storyboarding, and look books. See Enrollment Information section of catalog for prerequisites enforced at registration.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CINE708S - The Silent Film: An Introduction

Course Description
The first thirty-five years of cinema as an emerging art form and mode of communication. Aesthetic, technical, and cultural aspects of the medium will be considered in historical context, from nineteenth-century experiments to nascent narrative conventions and the first disruptive avant-garde movements. Focus is on close reading of relevant films. Graduate course will have an additional final research paper.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS708S THE SILENT FILM

CINE711S - Video, Art, Politics

Course Description
This class teaches aspects of conceptual video production within a study of historical work by artists responding to still-current political concerns, such as anti-Black police violence, the AIDS pandemic, electoral disenfranchisement and spectacle, and mass incarceration. With attention to the complex relationships between politics and aesthetics, we will consider contemporary video as cinematic form, gallery exhibition, web stream, broadcast television, and social process, or used as act of witness, tactical media intervention, political prank, and legal/physical defense strategy. Classwork includes individual and collective video production and extensive group critique. Graduate requirements will include additional weekly readings and screening, and final reflective writing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST711S VIDEO, ART, POLITICS, ARTSVIS711S VIDEO, ART, POLITICS

CINE716 - Cinematic Authorship

Course Description
Theories of authorship continue to generate heated debates. What is at stake in these debates and for whom? This course will consider both the historical and contemporary debates around the controversial notion of authorship as it relates to signature and style. Drawing on film and media theory, literary theory, and philosophy, we will examine how artists explore and challenge the romantic conflation of the author as a stylistic innovator, site of influence, collaborator, and iconoclast. Throughout the semester we will ask: What is an author? What is the impact of stylistic innovation in media culture? And, why does authorship matter?

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CINE718S - Sound in Cinema: Sonic Theories in Film and Media

Course Description
Examination of historical and contemporary debates on the impact of sound in film and various media. Exploration of how artists, scholars, and theorists challenge conventional assumptions about the relationship between image and sound, and the normalized separation of elements that privilege visual over sonic experience. Analysis of sound's political, aesthetic, philosophical, and theoretical implications, and the impact of stylistic approaches to sound design and innovation. Graduate-level students are expected to delve deeper into sound's scholarly and conceptual aspects through original research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS718S SOUND IN CINEMA, DOCST718S SOUND IN CINEMA, THEATRST718S SOUND IN CINEMA

CINE721S - Motion Graphics for Film and Video

Course Description
An exploration of techniques and theoretical approaches to motion graphics, animation and post-production effects in film and video. Readings and screenings will lead to student-produced exercises through exposure to applications in the Adobe Creative Cloud and digital editing software. Graduate students enrolled in this course, will be asked to complete additional research either in the form of an paper or additional production assignment.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS721S MOTION GRAPHICS

CINE733S - Creative Non-Fiction Cinema—Representing The Real

Course Description
The possibilities and contradictions of documentary practices are our starting point for an investigation of historic film and video works that use formally inventive strategies to represent, re-think, interrogate, or effect reality. Students will engage in video production processes, exploring issues such as power relations between maker, subject and viewer, the ability and limits of an image to act as evidence, flows between ethnographic practice and colonial

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units
Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST734S CREATIVE NON-FICTION CINEMA

CINE745S - The Nature Film: History and Practice

Course Description
Graduate section of The Nature Film: History and Practice. Traces the genealogy of the nature film from scientific 'animal locomotion studies' of the 19th-century to the proliferation of viewing options today. Film and television have emerged as the primary story-telling media of this past century. So too, for many viewers, have they become the main source of encounters with the natural world. Through hands-on exercises, screenings, readings and production assignments, students will explore the established narrative conventions and cinematographic techniques that have been employed in films about nature. Graduate students will have an additional final paper requirement.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units
Min Units:
3

Max Units:
3

CINE749S - Cinematography

Course Description
In-depth investigation of cinematographic techniques and principles for motion picture production. Exercises in both film and high definition digital video. Emphasis on advanced lighting techniques, lensing, camera mobility, set operations and close analysis of master works of cinematography. Graduate students will have a supplemental reading list as determined by the instructor and will be responsible for an additional practice assignment and or/ writing assignment linking course content to graduate thesis work.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units
Min Units:
3

Max Units:
3

Crosslisted Courses
VMS760S CINEMATOGRAPHY

CINE750S - Sound For Film and Video

Course Description
Theory and practice of sound recording techniques and strategies for film and video. Focus on sound/image relationship, sound design and sound acquisition. Screenings and readings will reinforce practice exercises. Graduate level assignments and project.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units
Min Units:
3

Max Units:
3

Crosslisted Courses
VMS739S SOUND FOR FILM AND VIDEO

CINE751S - Narrative Projects

Course Description
Development and production of short narrative film projects. Project-based course taking short film concepts through script development, pre-production, production, and post-production. Prior video production experience recommended. Graduate students will be required to develop an additional production project or submit a supplementary research component for credit in the class.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS751S NARRATIVE PROJECTS

CINE752S - Independent African American Cinema

Course Description
Independent African American Independent cinema from the silent film era to the present. Perspectives on issues of politics, representation, cultural identity, marginality and difference in contemporary American society. Focus on independent directorial figures and their intervention through genres, historical movements, and modes of production to examine how innovation helps define African American cinema's rich past and possibilities as well as key shifts in the larger social contexts of race, gender, and class in the United States.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CINE753S - Cinematography II Graduate

Course Description
Course explores the approaches, strategies, motivations, and creative processes that inform cinematography. Elements of cinematic style, visual imagination, and storytelling are discussed and explored through exercises. Students learn the relationships and responsibilities involved in the art, and are guided in the execution of the various canonical and extraordinary working methods involved in traditional, experimental, and modern cinematography. Graduate students will be required to complete summary written and production work befitting their experience. Suggested prerequisite: CINE 749S.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS753S CINEMATOGRAPHY II, VMS753S CINEMATOGRAPHY II, DOCST753S CINEMATOGRAPHY II

CINE754S - Animation Projects

Course Description
Building on foundations of animation, this course expands upon and develops a further working knowledge of challenges faced in animation production. Examines the historical origins of animation from film and digital imaging to the contemporary 3-D workflow. Skills will be integrated into a self-directed final project of the student's own design. The graduate section of the class will have an additional written research component.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CINE757S - Editing for Film and Video

Course Description
Theory, history, and practice of film and video editing techniques. Exploration of narrative, documentary and experimental approaches to structuring moving image materials, using digital non-linear editing. Course work will include screening, reading, writing, editing exercises, and video production projects, culminating in a final class screening. No prior experience necessary. Graduate students will be required to complete more advanced assignments and/or additional projects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS757S EDITING FOR FILM AND VIDEO, DOCST757S EDITING FOR FILM AND VIDEO, ISS757S EDITING FOR FILM AND VIDEO

CINE771S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, LIT850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY

CINE772 - The Middle East through Film

Course Description
Film as access into the region through a series of direct and poetic connections woven across films viewed, filmmakers featured, and lectures, discussions, and texts read. Using integration of course components and students' weekly responses, an understanding of the region is developed by way of inquiry into and rigorous engagement with cultural production. From feature length films to shorts, the breadth of the work we will engage with includes documentaries, dramas, and less traditional forms. Midterm paper, final project required in the form of one of three potential possibilities subject to approval of proposal: a paper, a talk, or a short film. Graduate-level assignments and projects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS772 THE MIDDLE EAST THROUGH FILM

CINE773S - Russian Language and Culture through Film

Course Description
Study of Russian cultural paradigms and constructs of self and other as demonstrated in Russia and Soviet films, primarily from 1960s to the present. Special attention to the analysis of linguistic constructs and their cultural semantic content as well as comparative analyses of Soviet and Russian culture and Russian and European/American culture. Film and computer technology, as well as access to these technologies and their implementation, are a central part of the cultural context. Includes oral and written presentations and analysis which require the usage of additional film text and secondary critical literature. Prerequisite: Russian 301S or equivalent or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN773S RUS LANG/CULTURE THROUGH FILM, VMS773S RUS LANG/CULTURE THROUGH FILM

CINE775S - Recycled Cinema

Course Description
Found footage filmmaking, cinematic appropriation, the use of archival materials in documentaries, and current day internet mashups. Covering early cinema, experimental and documentary cinema, television, and the internet. Key emphasis on practice based assignments with a concurrent focus on the historical impact of the field from seminal moments to the contemporary moment through films and readings on the subject. Graduate students in this course will be required to work on an additional final project at a higher level of complexity based on a proposal created in consultation with, and approved by the faculty.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS775S RECYCLED CINEMA, VMS775S RECYCLED CINEMA, DOCST776S RECYCLED CINEMA

CINE788S - Expanded Cinema

Course Description
This project-based course explores moving image installations beyond the traditional movie theater, engaging with alternative venues such as public spaces, museums, and gallery environments. Students will study key works and theories from the history of moving image art, from early cinematic devices to the Expanded Cinema movement of the 1970s, and up to contemporary new media practices that will culminate in a research paper. Throughout the course, students will also design and produce their own moving image installation projects culminating in a final exhibition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST788S EXPANDED CINEMA, LIT788S EXPANDED CINEMA

CINE790 - Special Topics in Cinematic Arts

Course Description
Special topics in cinematic arts.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CINE791 - Independent Study

Course Description
Individual work in a field of special interest under the supervision of a faculty member. Goal is a project covering a previously approved topic.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CLST528S - Greek History: Fifth through First Centuries BC

Course Description
Studies in later Greek History from the fifth through first centuries BC. Coverage within these chronological boundaries via survey, case-studies, or a combination of both. Offerings might include Fourth-century Greece, The Hellenistic World, Ptolemaic Egypt, vel sim.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY528S LATER GREEK HISTORY

CLST536 - The Roman Empire

Course Description
The foundation, consolidation, and transformation of Roman rule from Augustus to Diocletian.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY538 THE ROMAN EMPIRE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

CLST536S - Roman History from Augustus through Late Antiquity

Course Description
Study of Roman history from Augustus to the early medieval period via survey, case-studies, or a combination of both. Offerings might include The Roman Empire, The Julio-Claudians, The Second Sophistic, The Severans, The Third-Century Crisis, Late Antiquity, vel sim.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY539S LATER ROMAN HISTORY

CLST540S - Roman Coinage: The Materiality of the Roman Economy

Course Description
New trends in Roman numismatics (from the late Republic to the early Empire, 3rd c. BCE-2nd c. CE). Archaeology from coins. Barter, money and coinage. The introduction of coinage in Rome and the provinces. Making money (coin production), using money (monetary, non-monetary and ritual uses), losing money (coin circulation, hoards, single finds): contextual interpretations. Monetary systems: coins from Rome and coins from the provinces. Coinage and identity. False coinage.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST549S ROMAN COINAGE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

CLST542S - Greek Art: Hellenistic to Roman

Course Description
Seminar explores art of Greek East from 300 B.C.E to 300 C.E.; emphasis on understanding and analyzing production, style, materials, functions. Sculpture made for Hellenistic kings and cities, and changes in sculptural production with Roman conquest and imperial rule. Main categories of evidence: funerary monuments, portrait statues, heroic groups in baroque style, Dionysiac-themed decorative sculpture. Issues of stylistic categories, periodization, meaning and interpretation, theoretical perspectives expressed in ancient literary texts, and current scholarly debates and trends in study of Hellenistic and Roman art in a Greek context form an integral part of the seminar.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST502S GREEK ART: HELLENISTIC-ROMAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CLST543S - The Archaeology of Death: Ritual and Social Structure in the Ancient World

Course Description
Contextual study of material culture linked to funerary practices and traditions in the ancient Greek or Roman world. Topics may include funerary rituals, the ritualization of space around cities and in the countryside; ancestor cult and ancestor representation; monumental and not so monumental tombs, grave offerings and grave assemblages; public personas and funerary iconography: gender, age, occupation. Death in Greece/Rome and death in the provinces.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST545S THE ARCHAEOLOGY OF DEATH

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

CLST544L - Introduction to Digital Archaeology

Course Description
Course studies the radical changes that new methodologies and technologies have wrought in archaeology. Remote sensing technologies, digital tools, virtual reality systems for data recording, documentation, simulation and communication of archaeological data have profoundly changed archaeological field operations. Course surveys the state of the art in: techniques of digital recording and digital documentation; GIS and remote sensing; international case studies in digital archaeology; virtual reality and virtual simulation; Web and digital publications.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST547L DIGITAL ARCHAEOLOGY, ISS544L DIGITAL ARCHAEOLOGY

General Education Curriculum Codes
(R) Research, (STS) Sci, Tech, and Society, (CZ) Civilizations

CLST546S - Ancient Spain and Portugal: The Roman Provinces of the Iberian Peninsula

Course Description
Examines how Roman provinces were created and incorporated into the Roman Empire. Investigates traces in ancient visual and material culture of bonds between provinces and Rome. Approaches complex issues of colonialism, change and continuity connected with Roman conquest of new territories in the Mediterranean. Examines monuments and new archaeological data available from Roman Spain and Portugal, selected samples from other Roman provinces.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST503S ANCIENT SPAIN AND PORTUGAL

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

CLST547S - Roman Provincial Archaeology: The West

Course Description
Investigates ancient visual and material culture for information about relations between Rome's western provinces (especially Spain) and Rome, from initial, brutal conquest through incorporation. Within an archaeological context we address complex issues, such as colonialism and indigenous change and continuity, as evidence in Rome's conquest of new territories in the Mediterranean. Examines monuments and new archaeological data available from Roman Spain, as well as selected samples from other Roman provinces of the western Mediterranean (Britain, Gaul, and others).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST520S ROMAN PROVINCIAL ARCHAEOLOGY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CLST550 - Principles of Pre-Roman and Etruscan Archaeology

Course Description
This course is about the study of one of the most important and fascinating civilizations of ancient Italy and of the pre-Indoeuropean world, which deeply influenced the Classical world and the Mediterranean basin. It will involve archaeological study and comparative analyses of pre-urban and urban settlements, the necropoleis, art, art history, language, iconography and cultural assets and archaeological remains of the Etruscan and pre-Roman Italic worlds. Ultimately, the archaeological interpretation of Etruscans and other ancient societies in the first millennium BCE will raise new research questions in the field of Mediterranean and classical archaeology.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

CLST551S - Principles of Roman Archaeology

Course Description
Survey of the material culture of the Roman world, from the creation of the first provinces in the Late Republic to the end of the principate under Diocletian (late 3rd c. BCE–late 3rd c. CE). The course analyzes the archaeology of Rome and the provinces from a thematic perspective. Subjects include imperialism and colonization, rural and city landscapes, housing and households, necropoleis, the ancient economy, social identities (such as gender and age) and social structure (slavery). The course addresses various theoretical models to understand, among other topics, the creation and the decline of the empire and incorporates, when possible, hands-on work with artifacts at the Nasher Museum.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST553S ROMAN ARCHAEOLOGY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

CLST552 - Greek Archaeology Survey, Part 1

Course Description
The first of a two-part intensive survey of the material culture of the Ancient Greek world in the early period, focusing on the Iron Age and Archaic periods (ca. 1000-480 BC). The course will examine the archaeological evidence for civic, rural, sacred, funerary and domestic activities and will consider the development of architectural, sculptural, and ceramic forms throughout the period in order to understand how material culture both reflects and shapes cultural identity. Various methodological approaches and theoretical models will be introduced, and the distinction of Greek culture from others in the Eastern Mediterranean will be interrogated.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST556 GREEK ARCHAEOLOGY I

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

CLST553 - Greek Archaeology Survey, Part 2

Course Description
The second of a two-part intensive survey of the material culture of the Ancient Greek world, this time focusing in the Classical and Hellenistic periods (ca. 480-31 BC). The course will examine the archaeological evidence for civic, rural, sacred, funerary and domestic activities and will consider the development of architectural, sculptural, and ceramic forms throughout the period in order to understand how material culture both reflects and shapes cultural identity. Special attention will be paid to the definition of 'Classical' Greek culture and its re-definition in the Hellenistic period. Various methodological approaches and theoretical models will be introduced.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

CLST558S - Live Images: Ancient and Medieval Representations of the Divine

Course Description
The study of ancient and medieval works—speaking statues, miraculous icons, moving paintings. Seminar addresses questions of artistic and pictorial agency. Readings include theoretical texts, primary sources, and historical studies.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS533S LIVE IMAGES, RELIGION552S LIVE IMAGES, MEDREN507S LIVE IMAGES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CLST560 - Etruscan Cities

Course Description
Focuses on concept and definition of city in Etruscan society and its socio-political role in territorial organization. Main topics include pre-urban and urban development of Etruscan society, the first settlements, space and rituals, formation and development of Etruscan City States, cities and landscapes, cultural models between Greeks and Etruscans, colonies and emporia, transformations and changes in Roman times. Primary evidence for all the above will be visualization of material remains from antiquity.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST561 ETRUSCAN CITIES

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

CLST571S - Ancient Political Philosophy

Course Description
Intensive analysis of the political philosophy of Plato, Aristotle, and other ancient theorists. Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI575S ANCIENT POL PHILOSOPHY, PHIL571S ANCIENT POL PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

CLST572S - Plato

Course Description
Selected dialogues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL511S PLATO

CLST573S - Aristotle

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL512S ARISTOTLE

CLST590S - Special Topics in Greek Art

Course Description
Problems and issues in a specific period or genre of Greek material culture. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST590S-1 SPECIAL TOPICS IN GREEK ART

CLST590SL - Special Topics in Roman Archaeology

Course Description
Studies in Roman art and archaeology on focused themes, or on particular assemblages or problems. Offerings might include Art and Architecture of Pompeii, Roman Portraiture vel sim. Includes laboratory component.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST590SL SP TOP ROMAN ARCHAEOLOGY

CLST690S - Special Topics in Classical Studies

Course Description
Topic varies from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

CLST691 - Directed Reading and Research

Course Description
Credit to be arranged.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

CLST724S - Seminar in Ancient History I (Topics)

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CLST725S - Women in Antiquity: An Intensive Methodological Introduction

Course Description
Gaining methodological introduction to study of women in antiquity; students also practice three crucial skills: how to research, how to discuss research, how to teach using specialized research. Subject of women in antiquity ideal vehicle (or test case) for these skills, as subject is inherently interdisciplinary and unavoidably fraught: unrecognized biases affect ancient evidence and contemporary scholarship.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST725S WOMEN IN ANTIQUITY

CLST729S - Religious Material Culture in Theory and Practice

Course Description
Examines prevailing theories and methods of studying objects, spaces, images, and the senses as primary forms of evidence for understanding religions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST911S RELIGIOUS MATERIAL CULTURE, RELIGION911S RELIGIOUS MATERIAL CULTURE

CLST733L - Virtual Museums: Theories and Methods of Twenty-First-Century Museums

Course Description
The future of museums will be one of immateriality and interaction. Course focuses on how the 'Internet of Things,' augmented reality technologies, new data analyses of artifacts will transform missions, roles, and goals of museums and collections. Core of course will be digital lab sessions focused on virtual reconstruction of lost heritage—e.g., museums and sites destroyed and damaged by ISIS and other conflicts in Iraq and the Middle East (Hatra, Nineveh, Nimrud, Baghdad). Graduate students will be assigned additional critical readings and be expected to write a final research paper of 3000 words based on a topic related to their interests worked out with the professor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST733L VIRTUAL MUSEUMS, ARTSVIS733L VIRTUAL MUSEUMS, CMAC733L VIRTUAL MUSEUMS, ISS733L VIRTUAL MUSEUMS

CLST744S - Archaeology Seminar I (Topics)

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CLST748S - Archaeology Seminar II (Topics)

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CLST754S - Greek Sculpture in Athens, Archaic to Roman

Course Description
Sculptural remains from Athens are exceedingly rich and extremely important for history of Greek art; most of our knowledge about Greek sculpture is derived from Athenian evidence. Hellenistic sculptors of Athens well known throughout the Mediterranean, working in Delos, Pergamon, Rome. Abundant literary and epigraphic evidence provides wealth of contextual information to reconstruct historical, political, and ideological circumstances of production and display of public statuary in Athens in a way that is not possible for any other ancient city except perhaps imperial Rome. Thorough understanding of Athenian material essential foundation for study of Greek sculpture. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST727S GREEK SCULPTURE IN ATHENS

CLST790 - Special Topics in Classical Studies

Course Description
Special Topics in Classical Studies. Topics vary by semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CLST802S - Atheisms before Secularism from Socrates to Spinoza

Course Description
Examines atheism as a philosophical, theological, material, and political category across premodern Europe and the Middle East.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION802S ATHEISMS BEFORE SECULARISM, ARTHIST802S ATHEISMS BEFORE SECULARISM

CLST808S - Classical Studies Pedagogy

Course Description
This weekly workshop examines in practical and theoretical terms both traditional and new methods in teaching ancient languages, ancient culture and history, and archaeology, including topics such as the role of technology in and out of the classroom, syllabus design, aims and methods of evaluation, classroom dynamics, lesson planning, teaching resources.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

CLST881 - Christian Manuscript Culture

Course Description
Investigating provenience & provenance of Christian manuscripts, esp. in Duke University collections. Manuscripts as windows into religious and cultural priorities of Christians from late antiquity to beyond medieval period. Books as liturgical objects; histories of transmission & reception of biblical & patristic texts; manuscripts as gifts and plunder; texts and paratexts as evidence of lived religion. Canon formation and representation, philological and aesthetic notions of 'the authentic,' and scribal and scholarly expertise as aspects of book production and circulation will also be addressed as individual manuscripts are placed within their complex historical and material contexts.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION885 CHRISTIAN MANUSCRIPT CULTURE, HISTORY881 CHRISTIAN MANUSCRIPT CULTURE

CLST940S - Death and Dying in Late Antiquity

Course Description
Death, in antiquity as in the present era, sat at the intersection of a wide range of discourses. Medical doctors, for example, sought to avert it, jurists to mitigate its impact upon family relations and the flow of capital, philosophers and theologians to prescribe approaches to it, and bishops and other religious professionals to create rituals by which to assist the departed's transition into the afterlife and to channel the grief of her surviving loved ones. This seminar aims to locate death at the intersection of material and literary culture, liturgical practice and economic impact upon ancient Christian communities.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION930S DEATH AND DYING IN LATE ANT

CLST590S-1 - Special Topics in Greek Archaeology

Course Description
Focused studies in Greek archaeology on specific themes, assemblages or problems. Offerings might include Homeric Archaeologies, Greek Sanctuaries, Hero Cult, War and Commemoration, Western Greece, vel sim.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST590S-11 SP TOP GREEK ARCHAEOLOGY

CMAC520S - Ghostly Statistics: Revenge Tragedies and Natural Language Processing

Course Description
An introduction to the study of Renaissance revenge tragedies using traditional literary methodologies alongside computational tools. The course readings include foundational classical texts that define the genre of tragedy, some of the most important authors of revenge tragedies—from Marlowe to Webster—and modern philosophical accounts of revenge and justice. The computational approach covers the mathematical concepts of linear algebra and statistics used in Natural Language processing, with applications in Python, with a goal of developing a working intuition of how language models work. No mathematical prerequisites and no prior familiarity with Renaissance literature necessary.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ISS520S GHOSTLY STATISTICS, MEDREN600S GHOSTLY STATISTICS

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, QS - (QS) Quantitative Studies

CMAC564S - Physical Computing

Course Description
Seminar in physical computing, creative coding, and the emerging artistic possibilities of the Internet of Things. Emphasis on the medial physicality of computation, and exploration of interfaces to the computational that depart from the keyboard, mouse, and screen. Discussion of the social implications of 'smart' objects. Hands-on development of individual and group projects using Arduino, an extension of C/C++, internet-enabled microprocessors, and an array of analog and digital sensors and actuators. Topics also include networking, communication protocols, circuit design, and physical prototyping.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS555S PHYSICAL COMPUTING, VMS564S PHYSICAL COMPUTING, ARTSVIS564S PHYSICAL COMPUTING

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, QS - (QS) Quantitative Studies

CMAC565S - New Media, Memory, and the Visual Archive

Course Description
Explores impact of new media on the nature of archives as technologies of cultural memory and knowledge production. Sustained engagement with major theorists of the archive through the optics of 'media specificity' and the analytical resources of visual studies. Themes include: storage capacity of media; database as cultural form; body as archive; new media and the documentation of 'everyday life;' memory, counter-memory, and the politics of the archive; archival materiality and digital ephemerality. Primary focus on visual artifacts (image, moving image) with consideration of the role of other sensory modalities in the construction of individual, institutional and collective memory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS565S NEW MEDIA, MEMORY, AND ARCHIVE, VMS565S NEW MEDIA, MEMORY, AND ARCHIVE

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

CMAC575S - Generative Media Authorship - Music, Text & Image

Course Description
Covers Generative Media in all its forms. Lectures, workshops, discussions, one semester-length project, shorter individual exercises and readings. Interdisciplinary Graduate Seminar with advanced undergraduates and MFA students with permission of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS575S GENERATIVE MEDIA AUTHORSHIP, VMS575S GENERATIVE MEDIA AUTHORSHIP, ISS575S GENERATIVE MEDIA AUTHORSHIP, MUSIC575S GENERATIVE MEDIA AUTHORSHIP

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

CMAC580S - Proseminar 1: Interdisciplinary Digital Humanities

Course Description
Multimodal interdisciplinary digital humanities in theory and practice. Research, cultural heritage applications, public outreach. Theoretical and critical perspectives on humanities texts, data, images and other media; archives and exhibitions; visualization; museums; digital mapping and timelines; immersive and interactive media systems; apps and installations. Project-based critique, hands-on exercises, project management, and reflective writing. Interaction with Smith Media Labs projects and collaborators. Attention to digital divides, access and equity issues, global media contexts, sustainability, evaluation best practices, and obsolescence/EOL considerations for digital projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS580S DIGITAL HUMANITIES PROSEM 1, ISS580S DIGITAL HUMANITIES PROSEM 1, ARTHIST580S DIGITAL HUMANITIES PROSEM 1

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CMAC581S - Proseminar 2: Critical Approaches to Computational Media Practice

Course Description
Core studio practice-based course for advanced computational methods; emphasis on development of individual artistic and/or digital research practice through prototyping and critique. Introduction to key paradigms for computational practice that can inflect a variety of creative and scholarly avenues, from experimental documentary to digital art history to generative and algorithmic approaches to digital, physical and interactive media. Specific topics may vary.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS581S COMPUTATIONAL MEDIA PROSEM 2, ISS581S COMPUTATIONAL MEDIA PROSEM 2, ARTHIST581S COMPUTATIONAL MEDIA PROSEM 2

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CMAC590 - Special Topics in Computational Media

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CMAC590S - Special Topics in Computational Media, Arts, and Cultures

Course Description
Topics vary by semester and include subjects, areas, or themes that embrace a range of disciplines in the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC591 - Individual Independent Study

Course Description

This course is an independent study which encourages students to pursue original/individual research in their academic field within Computational Media, Arts and Cultures. Students will conduct directed research and writing in areas unrepresented by regular course offerings. Students will meet with instructor on a weekly basis to discuss project progress; other requirements are to be determined based on needs of project proposal. Only students with pre-approved project proposals should register for this course. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

CMAC592 - Individual Independent Study

Course Description

This course is an independent study that encourages students to pursue original/individual research in their academic field within Computational Media, Arts and Cultures. Students will conduct directed research and writing in areas unrepresented by regular course offerings. Students will meet with instructor on a weekly basis to discuss project progress; other requirements are to be determined based on needs of project proposal. Only students with pre-approved project proposals should register for this course. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

CMAC593 - Research Independent Study in Computational Media, Arts and Cultures

Course Description

Individual research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

R - (R) Research

CMAC606 - Advanced Digital Practice

Course Description

This project-based course focuses on advanced techniques in digital imaging, with emphasis on 2D digital design and/or 2D time-based media. Students will develop an exhibition-worthy portfolio of 2D digital imaging and time-based media work, accompanied by an artistic statement that discusses the work in the context of the field. The student's work will be coherent and reflective of the development of a unique and independent visual style informed by a deep understanding of historical and contemporary design. Digital projects will be supplemented with readings, discussions, and sustained artistic critique, critically relating student work to major movements and debates in art and design. Prerequisite: Visual Arts 206, 223, or 381, or consent of instructor.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS606 ADVANCED DIGITAL PRACTICE, ISS606 ADVANCED DIGITAL PRACTICE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

CMAC613S - Computational Media Studio in Advanced Digital Practice

Course Description
Advanced digital practicum in interactive computational media as vehicle for creative and critical expression. Opportunity to synthesize previous course work in multimedia practice, web/graphic/motion design, 3D modeling/gaming, computer programming. In-depth exploration of computational media production as artistic practice through exercises, projects, and critiques. Acquisition and refinement of expertise in procedural and object-oriented programming, two- and three-dimensional graphics, data visualization, physical computing, AR/VR, and other emergent computational platforms. Sustained engagement with computational ethics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS613S COMP MEDIA STUDIO ADV DIG PRAC, HCVIS613S COMP MEDIA STUDIO ADV DIG PRAC, ISS613S COMP MEDIA STUDIO ADV DIG PRAC

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

CMAC618S - Theories of the Visual

Course Description
Examines the 'visual' as concept of major concern that traverses the debates of the modern and postmodern periods. Expands from the technological (painting, photography, cinema, television, and computation) to the theoretical and philosophical interpretation of visual culture. Examines major periods: from philosophical critique of visuality in 19th and early 20th c., to the height of cultural theory and criticism up until the 1970s; from the late 20th c. to the contemporary period that includes debates that expand our understanding of visual experience. Ends with introducing work that aims at decentralizing Western thought in the debate.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT618S THEORIES OF THE VISUAL, ARTSVIS618S THEORIES OF THE VISUAL, CINE618S THEORIES OF THE VISUAL, ROMST618S THEORIES OF THE VISUAL, VMS618S THEORIES OF THE VISUAL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CMAC623S - Media Philosophy: Systems, Information, Capital

Course Description
This course investigates media and media systems through a close analysis of key texts and authors in this field. It draws on and compares scholarship in the field as developed in the German, French and US theories of technology, information and communication, and mediation. This course understands media as much from an engineering point of view as from a philosophical one. It accounts for the specificity of media as information systems and accounts for the historical significance of cybernetics and computation in the development of feedback oriented and interactive systems that have transformed theories of aesthetics and politics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT615S MEDIA PHILOSOPHY, VMS623S MEDIA PHILOSOPHY

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum

CMAC635S - Artificial Intelligence application and research in the Arts and Humanities

Course Description
Where do artificial intelligence, computational thinking and knowledge production intersect with humanist inquiry and visual aesthetics? This course centers on the production and output of humanist research, creative visual design, artwork and artifacts through machines and algorithms. The roles of authorship, data creation, data ethics, creativity and aesthetics will be interrogated through readings and research on theoretical texts and existing modes of cultural production. Students are expected to contribute to the course as technological makers, humanists, artists, hackers and engineers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS635S AI IN THE ARTS AND HUMANITIES, ISS635S AI IN THE ARTS AND HUMANITIES

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

CMAC660S - Games, Play, and Selfhood: Immersive Media and Extended Realities

Course Description
Interdisciplinary study of history, theory, criticism, practice of immersive and interactive media, with emphasis on virtual worlds, games, and extended reality. Cross-cultural interpretative frameworks, intersectional theories, comparative approaches across East/West and Global South. Critical examination of the metaverse and playable, interactive environments as analog, historic, and contemporary phenomena. Online selfhood, avatar identities, and digital cultures. Ludology versus narratology, hyperreality, agency, aesthetics. Theories of space, place, memory, gamification, participatory media. Applications in museums, cultural heritage, art, journalism, theater, and popular media. Hands-on testing and digital authoring. Blogs, critical research paper, final projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS660S GAMES, PLAY, AND SELFHOOD, VMS660S GAMES, PLAY, AND SELFHOOD, GSF660S GAMES, PLAY, AND SELFHOOD, AMES660S GAMES, PLAY, AND SELFHOOD

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

CMAC666S - Neosentience: A Potential Future Form of AI and Research Platform Development via Unreal Game Engine

Course Description
Course explores a future form of AI called Neosentience based on mind/brain/body/environment relations (biomimetics). Weekly reports/discussions explore the topic from many perspectives related to different disciplinary understandings exploring humanistic, conceptual, computational & aesthetic paradigms—Conceptual Art. Students explore research driven by their disciplinary interests, feeding into real-world team-based research and discussion. Unreal Game Engine is being developed as a research platform/visualization system – Insight Engine 2.0. Students develop particular aspects of research: focused literature review, write a major research paper and/or define a related digital project.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS510S NEOSENTIENCE: FUTURE AI FORM, ISS666S NEOSENTIENCE: FUTURE AI FORM, ARTSVIS510S NEOSENTIENCE: FUTURE AI FORM

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

CMAC690 - Special Topics in Computational Media

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CMAC690S - Special Topics in Computational Media, Arts, and Cultures

Course Description
Subjects, areas, or themes that embrace a range of disciplines in the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC691 - Individual Independent Study

Course Description
This course is an independent study that encourages students to pursue original/individual research in their academic field within Computational Media, Arts and Cultures. Students will conduct directed research and writing in areas unrepresented by regular course offerings. Students will meet with instructor on a weekly basis to discuss project progress; other requirements are to be determined based on needs of project proposal. Only students with pre-approved project proposals and a faculty mentor should register for this course. Students will not be allowed to register for individual research without a faculty mentor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC692 - Individual Independent Study

Course Description
This course is an independent study that encourages students to pursue original/individual research in their academic field within Computational Media, Arts and Cultures. Students will conduct directed research and writing in areas unrepresented by regular course offerings. Students will meet with instructor on a weekly basis to discuss project progress; other requirements are to be determined based on needs of project proposal. Only students with pre-approved project proposals should register for this course. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC693 - Research Independent Study in Computational Media, Arts and Cultures

Course Description
Individual research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

CMAC695 - Computational Media, Arts & Cultures Internship

Course Description
Students may arrange academic work in conjunction with an approved internship with a digital art history or computational media focus. Academic work must be with CMAC-approved faculty and include the university minimum (one research paper) as well as reading from a bibliography and/or a viewing list approved by the instructor in advance.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

CMAC706 - Digital Imaging

Course Description
Photoshop and Illustrator used to introduce single and serial images for print and web output. Graduate students required to create an intensive portfolio of work investigating a relevant research topic. Graduate section offered in conjunction with undergraduate course Visual and Media Studies/Visual Arts 206. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS706 DIGITAL IMAGING, VMS706 DIGITAL IMAGING, ISS706 DIGITAL IMAGING

CMAC715 - Historical Geographic Information Systems (GIS)

Course Description
This is an introductory graduate Geographic Information System (GIS) course designed to help students develop GIS skills. The class emphasizes perspectives, procedures and tools that are relevant to applications of GIS in Art History and Humanistic disciplines. This course is designed as a hybrid lecture/lab format in which direct instruction is supplemented by hands on learning labs using ArcGIS software and real-world spatial data. The main skills students will gain are: Integration of spatial and tabular data, Geoprocessing, Data visualization, Creating features, Editing Features, Vector and Raster Integration, Spatial Analysis, Georeferencing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST714 HISTORICAL GIS, ISS715 HISTORICAL GIS

CMAC717 - User Experience and User Interface Design and Development

Course Description
How do we build knowledge about computational, aesthetic, product and spatial experience? What tools and methods enable our work in the design of these interactions? This course applies methods and technologies found in the User Experience (UX) and User Interface (UI) disciplines to analyze, document, design and prototype a number of spatial and product interactions. Readings and matched contextualization writing on UI/UX design will locate student work in terms of both theory and history. Grad section: add'l written component; historical readings will be paired with a written paper contextualizing the student's term project within the theoretical framework developed through readings.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS707 UI / UX DESIGN, ISS717 UI / UX DESIGN

CMAC719S - Creative Cartography: Art and Science, Culture and Nature

Course Description

Students learn how maps and map-making has always existed in a contentious position between art & science, culture & nature. Course combines discussion of readings on critical cartography, data visualization, and Historical GIS (HGIS) w/ hands-on tutorials in ArcGIS, Adobe Illustrator, and analog drawing. Labs, final projects emphasize how the form of a map (and all its inherent presumptions of accuracy, reality, and precision) can be manipulated to make art that tells new stories about people, places, and things that run counter to dominant narratives. Prior experience w/ vector-based design software and/or GIS recommended, not required. Grad section: discussion lead, tutorials, exhibition.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS719S CREATIVE CARTOGRAPHY, ARTHIST719S CREATIVE CARTOGRAPHY, ISS719S CREATIVE CARTOGRAPHY

CMAC720 - Programming and User Interface Design in Unity 3D

Course Description

Practical concepts and exercises with the C# programming language. Basic concepts of algorithms and data structures. Discussion of basic computer graphics concepts. Introduction to the Unity3D game engine. Importing various model formats into Unity3D. User interface design in Unity3D. Advanced scripting using C# for Unity3D. Unity3D common pitfalls and tips for optimizations. Usage of augmented and virtual reality libraries. Weekly homework and final project. No prior coding experience is assumed.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS720 UNITY 3D PROG./INT. DESIGN

CMAC720S - Programming and User Interface Design in Unity 3D

Course Description

Practical concepts and exercises with the C# programming language. Basic concepts of algorithms and data structures. Discussion of basic computer graphics concepts. Introduction to the Unity3D game engine. Importing various model formats into Unity3D. User interface design in Unity3D. Advanced scripting using C# for Unity3D. Unity3D common pitfalls and tips for optimizations. Usage of the MiddleVR virtual reality library. No prior coding experience is assumed.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS720S UNITY 3D PROG./INT. DESIGN

CMAC733L - Virtual Museums: Theories and Methods of Twenty-First-Century Museums

Course Description
The future of museums will be one of immateriality and interaction. Course focuses on how the 'Internet of Things,' augmented reality technologies, new data analyses of artifacts will transform missions, roles, and goals of museums and collections. Core of course will be digital lab sessions focused on virtual reconstruction of lost heritage—e.g., museums and sites destroyed and damaged by ISIS and other conflicts in Iraq and the Middle East (Hatra, Nineveh, Nimrud, Baghdad). Graduate students will be assigned additional critical readings and be expected to write a final research paper of 3000 words based on a topic related to their interests worked out with the professor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST733L VIRTUAL MUSEUMS, ARTSVIS733L VIRTUAL MUSEUMS, ISS733L VIRTUAL MUSEUMS, CLST733L VIRTUAL MUSEUMS

CMAC740L - Fundamentals of Web-Based Multimedia Communications

Course Description
Multimedia information systems, including presentation media, hypermedia, graphics, animation, sound, video, and integrated authoring techniques; underlying technologies that make them possible. Practice in the design innovation, programming, and assessment of web-based digital multimedia information systems. Intended for students in non-technical disciplines. Graduate version of undergrad course also includes higher-level exploration of Javascript topics and frameworks, WebGL/3D, and data visualization and a more substantive final project than undergrad section.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS740L WEB-BASED MULTIMEDIA COMMUNIC, VMS788L WEB-BASED MULTIMEDIA COMMUNIC

CMAC740S - Fundamentals of Web-Based Multimedia Communications

Course Description
Multimedia information systems, including presentation media, hypermedia, graphics, animation, sound, video, and integrated authoring techniques; underlying technologies that make them possible. Practice in the design innovation, programming, and assessment of web-based digital multimedia information systems. Intended for students in non-technical disciplines. Graduate version of undergrad course also includes higher-level exploration of JavaScript topics and frameworks, WebGL/3D, and data visualization and a more substantive final project than undergrad section.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS740S WEB-BASED MULTIMEDIA COMMUNIC, VMS788S WEB-BASED MULTIMEDIA COMMUNIC

CMAC741L - Web Project Design and Development

Course Description
Follow-on to ISS 240L/740L. Students should be experienced with basic HTML and CSS. Information and graphic design; use-case development; readings and group critiques. Continued work with HTML, CSS, Javascript, Frameworks. Introduction to PHP, MySQL and/or other server-based authoring techniques. Creation and templating of blogs, wikis, and content management systems. Embedded media and objects. Intellectual property and fair use. User testing. Short exercises, group work, individual semester project, and public site launch. Graduate level includes more advanced/substantive digital project management and development process.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS741L WEB PROJECT DESIGN AND DEVELOP

CMAC751S - Digital Storytelling and Interactive Narrative

Course Description
Digital storytelling methodologies, theory, and practice. In-depth analysis of digital storytelling in various media forms and modes of production. Cultural impact of new media narratives. Exploration of digital storytelling affordances and approaches: text, video, audio, design, animation, and interactivity. Critical analysis of existing media and remediation of older media forms. Experimentation with non-linear, spatial, ludic, and hypermedia approaches. Questions of authorship, agency, authority, and collaboration in blogs, games, fan fiction, adaptations. Hands-on experience w/ digital narrative and critiques. Grads write substantial, theoretically-engaged seminar paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS751S DIGITAL STORYTELLING, LIT751S DIGITAL STORYTELLING

CMAC755S - Videogame Design and Critique

Course Description
Surveys history, technology, narrative, ethics, and design of interactive computer games. Games as systems of rules, games of emergence and progression, state machines. Game flow, games as systems of pleasure, goals, rewards, reinforcement schedules, fictional and narrative elements of game worlds. Students work in teams to develop novel game-design storyboards and stand-alone games. Exploration of the interplay between narrative, graphics, rule systems, and artificial intelligence in the creation of interactive games. Programming experience not required. Graduate students required to write a critical seminar paper in addition to game design experience.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS755S VIDEOGAME DESIGN AND CRITIQUE, VMS755S VIDEOGAME DESIGN AND CRITIQUE

CMAC758S - Digital Durham

Course Description
Bass Connections course. Representing Durham past and present with digital media. Digitize historical and cultural materials, research in archives and public records and present information through various forms including web pages, databases, maps, video and other media. Analysis of social impact of new representations of place and space. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS758S DIGITAL DURHAM, EDUC758S DIGITAL DURHAM, HISTORY758S DIGITAL DURHAM

CMAC760S - Critical Digital Humanities: Theory and Practice

Course Description
Digital Humanities as an interdisciplinary and sometimes contentious 'field' or set of practices connected by their attention to how digital theories and methods transform the production of culture, representation of the past, and shape of artistic practice. Exploration of debates around and critiques of DH as a discipline, interdiscipline, transdisciplinary formation. Hack versus yack, theory versus practice. Emphasis on critical engagement. Future of higher education. Digital divides, inclusion and exclusion, and opportunities for what counts as scholarly work. Intersections with pedagogy, public humanities, artistic practice, activism. Relationship to media and technology studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS760S CRITICAL DIGITAL HUMANITIES, VMS770S CRITICAL DIGITAL HUMANITIES

CMAC766 - Media History: Old and New

Course Description
Development of media forms in historical and social contexts. Impact of old 'new' media on established art, commerce, education, politics, entertainment from 19th c on. Changing ideas about authenticity, authority, agency, reception, identity, and power relating to emerging media forms, production, circulation. Overlaps, disjunctures, convergences, persistences and antiquations. Print publishing, photography, audio recording, film, telegraph, maps, exhibitions, architecture and installations; web, multimedia, database, game, virtual reality, and telepresence. Final rich media research project required. Graduate version also requires theoretically and historically informed seminar paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS768 MEDIA HISTORY: OLD AND NEW

CMAC770S - Constructing Immersive Virtual Worlds

Course Description
Theory, practice, and creation of 3D virtual worlds. Hands-on design and development of online collaborative simulation environments. Introduction to graphics workflow for creating virtual world media assets. Critical exploration of state-of-the-art virtual world technologies; 3D graphics, chat, voice, video, and mixed reality systems. Topics include: history/culture of virtual worlds, identity and avatars; behavioral norms; self-organizing cultures; user-generated content, virtual world economies; architectural scalability. Graduate section includes readings and critical writing on theories of virtuality as they relate to technical content.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS770S IMMERSIVE VIRTUAL WORLDS

CMAC780 - Visualizing Cities: Representing Urban Landscapes, Cultures, and Environments

Course Description
Exploring digital and visual representation of landscapes, structures, environments, history, culture, architecture, events, and populations. Change over time, cultural heritage, possible futures, and alternate pasts from historical, cultural, documentary, and scientific evidence. Idea of city as a conceptual category and metaphor. Ubiquitous computing in urban environments/medium for interaction. Global cities and diaspora. Visual imager and written accounts. Use of mapping, imaging, 3D, augmented reality, games. The graduate version includes both the final digital project and a theoretically-informed graduate seminar paper. Topics and historical foci vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST780 VISUALIZING CITIES, ISS780 VISUALIZING CITIES, HISTORY779 VISUALIZING CITIES

CMAC790 - Special Topics in Computational Media

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CMAC790S - Special Topics in Computational Media, Arts, and Cultures

Course Description
Topics vary by semester. Subjects, areas, or themes that embrace a range of disciplines in the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC790T - Special Topics in CMAC: Project Based Tutorial

Course Description
Project-based special topics in CMAC.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CMAC791 - Individual Research Independent Study

Course Description
This course is an independent study that encourages students to pursue original/individual research in their academic field within Computational Media, Arts and Cultures. Students will conduct directed research and writing in areas unrepresented by regular course offerings. Students will meet with instructor on a weekly basis to discuss project progress; other requirements are to be determined based on needs of project proposal. Only students with pre-approved project proposals should register for this course. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC792 - Individual Research Independent Study

Course Description
This course is an independent study that encourages students to pursue original/individual research in their academic field within Computational Media, Arts & Cultures. Students will conduct directed research and writing in areas unrepresented by regular course offerings. Students will meet with instructor on a weekly basis to discuss project progress; other requirements are to be determined based on needs of project proposal. Only students with pre-approved project proposals should register for this course. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC794L - Interactive Graphics: Critical Code

Course Description
Interactive graphics programming for artists. This class explores object-oriented programming via the P5.js and ML5.js programming environments and develops an appreciation of interactivity and computer graphics as artistic media. Students strengthen their graduate-level artistic practices through an aesthetic and conceptual engagement with interactive art. Graduate-level projects incorporate themes, language, and theory from current practices into works developed throughout the semester. Projects extend p5.js by incorporating additional libraries, the development of backend systems, or the development of additional technologies.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS794L INTERACTIVE GRAPHICS, ISS794L INTERACTIVE GRAPHICS, VMS794L INTERACTIVE GRAPHICS

CMAC795S - Digital Art History/Computational Media Thesis Writing Workshop

Course Description
Support for the writing of the thesis paper through multiple drafts and group discussion. Writing of documentation and reflection of the MA in Digital Art History/Computational Media digital project.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HCVIS795S MA THESIS WRITING WORKSHOP, ARTHIST795S MA THESIS WRITING WORKSHOP, VMS795S MA THESIS WRITING WORKSHOP

CMAC796L - Media, Arts & Cultures Research Practicum I

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS796L RESEARCH PRACTICUM I, HCVIS796L RESEARCH PRACTICUM I, ISS796L RESEARCH PRACTICUM I

CMAC797L - Media, Arts & Cultures Research Practicum II

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS797L RESEARCH PRACTICUM II, HCVIS797L RESEARCH PRACTICUM II, ISS797L RESEARCH PRACTICUM II

CMAC798L - Media, Arts & Cultures Research Practicum III

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS798L RESEARCH PRACTICUM III, HCVIS798L RESEARCH PRACTICUM III, ISS798L RESEARCH PRACTICUM III

CMAC799L - Media, Arts & Cultures Research Practicum IV

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS799L RESEARCH PRACTICUM IV, HCVIS799L RESEARCH PRACTICUM IV, ISS799L RESEARCH PRACTICUM IV

CMAC850S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, LIT850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

CMAC881S - Critical Posthumanities: The Human in Question

Course Description
Beginning in the 1990s, the 'posthuman' has evolved as a chameleon-like concept designating everything from the transhumanist project to assure the continuity of humanity beyond the limits of human embodiment to the critical interrogations of suspect ontological boundaries separating the human from the non-human world writ large. Our discussion will be framed around two contemporary challenges to the human: how climate change repositions the human within larger, cosmological process; and how AI seeks to subsume the human into a generic model of intelligence.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT881S CRITICAL POSTHUMANITIES

CMAC890 - Special Topics in Computational Media

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CMAC890S - Special Topics in Computational Media, Arts, and Cultures

Course Description
Topics vary by semester. Subjects, areas, or themes that embrace a range of disciplines in the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CMAC590-2 - Topics in Computational Media Module

Course Description
This is a special topics module that will vary by semester. It is a half-unit course.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1.5

Max Units:
1.5

CMAC590S-3 - Special Topics in CMAC: Interdisciplinary Collaborative Project

Course Description
Interdisciplinary collaborative project with computational and arts/humanities dimensions. Topics will vary and be organized in advance by faculty teams. Group final product, critical reflection, documentation. When associated with Bass Connections, permissions will be connected to Bass application process. Students with experience in digital humanities and/or computational media practice as demonstrated by prior coursework and/or projects are also invited to contact instructor for a permission number.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CMB512S - Weird Model Organisms in Today's Evolutionary Cell Biology

Course Description
How and why are new organisms being developed as emerging models in cell biology? Through lectures and reading primary literature, we'll learn how traditional model organisms (E. coli, yeast, fruit flies, mice, etc.) were originally developed and how 'weird' organisms from across the Tree of Life are used to address questions ranging from human health to climate change. Guest speakers, early-stage biologists from various fields (e.g., academia, industry, government agency) and backgrounds, will share with us how their choice of model organisms impacted their research and career. Develop skills in critical reading, scientific presentation, discussion, and developing research proposals.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY512S WEIRD ORGANISMS IN CELL BIOL

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

CMB525S - Proteomics Methods in Life Sciences

Course Description
Proteins are the main molecular effectors driving cellular physiology. Cells differ in the nature of proteins being expressed, in their function, location, modifications, and fate. Thus, new technologies have been developed to study the cellular proteome in the omics era. Bio525S will provide an overview of current proteomics methods used to analyze and evaluate the complexity of the cellular proteome. This overview will be centered on discussing primary literature that employs a variety of mass spectrometry-based methods to understand protein dynamics. Recommended prerequisite Biology 201L or the equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY525S PROTEOMICS

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

CMB631 - Contemporary Topics in Membrane Biology

Course Description
This course will highlight modern topics regarding biological membranes and membrane proteins that are important for human physiology and disease. Topics include structure and dynamics of biological membranes, structure and function of membrane proteins that play critical roles in cell signaling, diseases related to dysfunction of membrane and membrane proteins, and current efforts on drug discovery. Major techniques used in membrane research will also be covered. The format will be a combination of lectures and discussion of primary literature. Students will be evaluated based on their class participation and performance at the final presentations. Reserved for graduate students; open to undergraduate students by instructor permission.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM631 MEMBRANE BIOLOGY, NEUROBIO631 MEMBRANE BIOLOGY, PHARM631 MEMBRANE BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CMB640 - Quantitative Approaches to Biological Problems: From Cartoon Models to System Behavior

Course Description
This class is aimed at biologists who want to gain an appreciation of how mathematical approaches can supplement experimental approaches. We will teach you how to convert cartoon diagrams to differential equations, and re-familiarize you with some basic concepts from math and physics that help us develop a better intuition of how the world works. Then we will discuss how quantitative approaches can yield insights into how control systems behave. The class will use calculus at an elementary level and an occasional computer simulation, but we will focus more on concepts and applications.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
UPGEN640 QUANT APPROACH BIO PROBLEMS

CMB658 - Structural Biochemistry I

Course Description
Principles of modern structural biology. Protein-nucleic acid recognition, enzymatic reactions, viruses, immunoglobulins, signal transduction, and structure-based drug design described in terms of the atomic properties of biological macromolecules. Discussion of methods of structure determination with particular emphasis on macromolecular X-ray crystallography NMR methods, homology modeling, and bioinformatics. Students use molecular graphics tutorials and Internet databases to view and analyze structures. Prerequisites: organic chemistry and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM658 STRUCTURAL BIOCHEMISTRY I, CELLBIO658 STRUCTURAL BIOCHEMISTRY I, UPGEN658 STRUCTURAL BIOCHEMISTRY I, SBB658 STRUCTURAL BIOCHEMISTRY I, CBB658 STRUCTURAL BIOCHEMISTRY I

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

CMB710A - Cell & Molecular Biology Module I

Course Description
One of six mini-courses offered sequentially during the Fall semester and together cover 24 topics. These are the core offerings of the Cell & Molecular Biology Program and allow maximum flexibility for a student-designed curriculum. Four different topics are available during each mini-course and students choose one. Topics reflect the expertise of the corresponding faculty and emphasize either in-depth critical discussion of the primary literature or quantitative/mathematical approaches to addressing biological questions. Each mini-course lasts for two weeks, with three meetings per week.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

CMB710B - Cell & Molecular Biology Module II

Course Description
One of six mini-courses offered sequentially during the Fall semester and together cover 24 topics. These are the core offerings of the Cell & Molecular Biology Program and allow maximum flexibility for a student-designed curriculum. Four different topics are available during each mini-course and students choose one. Topics reflect the expertise of the corresponding faculty and emphasize either in-depth critical discussion of the primary literature or quantitative/mathematical approaches to addressing biological questions. Each mini-course lasts for two weeks, with three meetings per week.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

CMB710C - Cell & Molecular Biology Module III

Course Description
One of six mini-courses offered sequentially during the Fall semester and together cover 24 topics. These are the core offerings of the Cell & Molecular Biology Program and allow maximum flexibility for a student-designed curriculum. Four different topics are available during each mini-course and students choose one. Topics reflect the expertise of the corresponding faculty and emphasize either in-depth critical discussion of the primary literature or quantitative/mathematical approaches to addressing biological questions. Each mini-course lasts for two weeks, with three meetings per week.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

CMB710D - Cell & Molecular Biology Module IV

Course Description

One of six mini-courses offered sequentially during the Fall semester and together cover 24 topics. These are the core offerings of the Cell & Molecular Biology Program and allow maximum flexibility for a student-designed curriculum. Four different topics are available during each mini-course and students choose one. Topics reflect the expertise of the corresponding faculty and emphasize either in-depth critical discussion of the primary literature or quantitative/mathematical approaches to addressing biological questions. Each mini-course lasts for two weeks, with three meetings per week.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

CMB710E - Cell & Molecular Biology Module V

Course Description

One of six mini-courses offered sequentially during the Fall semester and together cover 24 topics. These are the core offerings of the Cell & Molecular Biology Program and allow maximum flexibility for a student-designed curriculum. Four different topics are available during each mini-course and students choose one. Topics reflect the expertise of the corresponding faculty and emphasize either in-depth critical discussion of the primary literature or quantitative/mathematical approaches to addressing biological questions. Each mini-course lasts for two weeks, with three meetings per week.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

CMB710F - Cell & Molecular Biology Module VI

Course Description

One of six mini-courses offered sequentially during the Fall semester and together cover 24 topics. These are the core offerings of the Cell & Molecular Biology Program and allow maximum flexibility for a student-designed curriculum. Four different topics are available during each mini-course and students choose one. Topics reflect the expertise of the corresponding faculty and emphasize either in-depth critical discussion of the primary literature or quantitative/mathematical approaches to addressing biological questions. Each mini-course lasts for two weeks, with three meetings per week.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

CMB720 - Modern Techniques in Cell and Molecular Biology

Course Description

The course will introduce students to current techniques in six areas including light microscopy, mass spectrometry, genomics, cell biology, genetic engineering and advanced cell culture. Each area will provide an overview of key experimental approaches and will present examples of data acquisition, analysis and interpretation that will be complemented with problem solving and/or in-depth review by the students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

CMB733 - Experimental Design and Biostatistics for Basic Biomedical Scientists

Course Description
The use and importance of statistical methods in laboratory science, with an emphasis on the nuts and bolts of experimental design, hypothesis testing, and statistical inference. Central tendency and dispersion, Gaussian and non-Gaussian distributions, parametric and nonparametric tests, uni- and multivariate designs, ANOVA and regression procedures. Ethical issues in data handling and presentation. Student presentations in addition to formal lectures. Intended for third-year graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BME733 EXPERIMENT DESIGN & STATISTICS, PHARM733 EXPERIMENT DESIGN & STATISTICS, NEUROBIO733 EXPERIMENT DESIGN & STATISTICS, MOLCAN733 EXPERIMENT DESIGN & STATISTICS

CMB764 - Cell and Molecular Biology Colloquium

Course Description
Required of all CMB students. Presentations by upper-year students: one student talks about ongoing dissertation research and another introduces a research paper relevant to that week's seminar. Students attend the Thursday seminar (Cell Structure and Function) and can have lunch with the speaker. Credit is based on attendance.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

CMB797 - Modern Techniques in Molecular Biology

Course Description
This course introduces the fundamental laboratory techniques used in basic research. The course covers proteins, antibodies, reverse-phase protein arrays technique, protein interactions, proteomics, flow cytometry, x-ray crystallography, microscopy, DNA and RNA techniques, the novel CRISPR technology, animals in research, IACUC regulations, xenograft applications, and zebrafish models. This course is built around a team-based learning model. Course reading material and lecture materials will be provided to students to review before class, and class time is spent learning and reinforcing the material through interactive lectures and group discussion.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

COMPSCI507D - Mobile App development for programmers and entrepreneurs

Course Description
Explores the world of mobile applications and the business strategies of mobile software companies. Covers the fundamentals essential to understanding all aspects of the mobile app development industry; from product concept and application development to company creation and the business fundamentals necessary for creating a for-profit company. Students will create mobile applications using Apple's iOS operating system and Swift programming language. Students will also learn the necessary business topics for creating companies, funding raising and building a business based on mobile applications. Not open to students who have taken Computer Science 207.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI510 - Operating Systems

Course Description
Fundamental principles of operating system design applied to state-of-the-art computing environments (multiprocessors and distributed systems) including process management (coscheduling and load balancing), shared memory management (data migration and consistency), and distributed file systems.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI512 - Distributed Systems

Course Description
Principles and techniques for sharing information and resources in computer networks, ranging from high-speed clusters and data centers to the global Internet. Topics include advanced distributed storage, distributed programming environments, replication, caching and consistency, transactional concurrency control, reliable update and recovery, and issues of scale and security for Internet services. Recommended prerequisite: Computer Science 310 or 510.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

COMPSCI514 - Advanced Computer Networks

Course Description
Entry-level graduate course. Basic systems support for process-to-process communications across a computer network. The TCP/IP protocol suite and the Berkeley sockets application programs interface. The topics include congestion control, packet scheduling, routing, software defined networking, datacenter networks, network function virtualization, programmable switches, network measurement, remote direct memory access, residential networks, peer-to-peer networks, and content distribution networks. Recommended prerequisite: entry-level computer systems course (Computer Science 310, 356, 510); knowledge of the C or Python.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE558 ADVANCED COMPUTER NETWORKS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI515 - Wireless Networking and Mobile Computing

Course Description
Theory, design, and implementation of mobile wireless networking systems. Fundamentals of wireless networking and key research challenges. Students review pertinent journal papers. Significant, semester-long research project. Networking protocols (Physical and MAC, multi-hop routing, wireless TCP, applications), mobility management, security, and sensor networking. Prerequisites: Electrical and Computer Engineering 356 or Computer Science 310.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE556 WIRELESS NETWORKING

COMPSCI516 - Database Systems

Course Description
Principles and techniques for making intelligent use of the massive amounts of data generated in commerce, industry, science, and society. Topics include basic concepts in databases (SQL, relational algebra), indexing and hashing, query processing and optimization, transactions (concurrency control and recovery), parallel and distributed data processing, and selected advanced topics (e.g., Datalog, database theory, data cleaning and integration, stream processing, vector databases). Recommended prerequisites: Computer Science 201; Computer Science 210 or 250 or an introductory database course; or equivalent of the preceding courses or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI520D - Numerical Analysis

Course Description
Error analysis, interpolation and spline approximation, numerical differentiation and integration, solutions of linear systems, nonlinear equations, and ordinary differential equations. Prerequisites: knowledge of an algorithmic programming language, intermediate calculus including some differential equations, and Mathematics 221.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH565D NUMERICAL ANALYSIS, STA612D NUMERICAL ANALYSIS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI521 - Graph Analysis with Matrix Computation

Course Description
Undirected and directed graphs of interest are real-world networks, model-generated graphs and various induced graphs (such as line graphs and motif networks). Networks and graphs are characterized, analyzed and categorized by combinatorial, algebraic and probabilistic measures of connectivity and centrality, via matrix representation, connection and computation (including graph Laplacian matrices). Probabilistic network models include the small-world model, the scale-free model as well as the traditional Erdos–Rényi model. Community detection methods are introduced. Prerequisites: linear algebra, multivariable calculus, and basic programming knowledge and skill.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI524 - Dynamics of Complex Systems

Course Description
An introduction to the quantitative description and analysis of physical systems with complex dynamics and how the properties of such systems change as parameters are varied. Part of the course will discuss dynamical systems described by just a few variables and related concepts such as model equations, phase space, linear stability, bifurcations, universality, attractors, fractals, chaos, and time series analysis. Other topics will vary by instructor and might include spatiotemporal dynamics, dynamical networks, and the control of dynamical systems. Prerequisite: MATH 216, the PHYSICS 161/162 sequence, and COMPSCI 101, or their equivalents.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS513 DYNAMICS OF COMPLEX SYSTEMS, NCS513 DYNAMICS OF COMPLEX SYSTEMS

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

COMPSCI526 - Data Science

Course Description

Data science is 'the science of planning for, acquisition, management, analysis of, and inference from data'. This course systematically covers the concepts, ideas, tools, and example applications of data science in an end-to-end manner. We emphasize data-driven thinking, data processing and analytics, and extracting actionable values from data. We focus on the interactions between data and applications, data modeling, and data processing, data analytics, and the essential algorithms and tools. Prerequisites: A statistics course (Statistics 111 or higher), data structures and algorithms (Computer Science 201), and relational databases (Computer Science216 or 316).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB526 DATA SCIENCE, ECE583 DATA SCIENCE

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI527 - Introduction to Computer Vision

Course Description

Image formation and analysis; feature computation and tracking; image, object, and activity recognition and retrieval; 3D reconstruction from images. Prerequisites: Mathematics 221, 218 or 216; Mathematics 212; Mathematics 230 or Statistical Science 230; Computer Science 101; Computer Science 230.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

COMPSCI531D - Introduction to Algorithms

Course Description

Applications include dynamic data structures, graph algorithms, randomized algorithms. Intractability and NP completeness. Prerequisite: Computer Science 201 and 230, or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI532 - Design and Analysis of Algorithms

Course Description

Design and analysis of efficient algorithms. Algorithmic paradigms. Applications include sorting, searching, dynamic structures, graph algorithms, randomized algorithms. Computationally hard problems. NP completeness. Prerequisites: Computer Science 201 and 330 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI534D - Computational Complexity

Course Description
Turing machines, undecidability, recursive function theory, complexity measures, reduction and completeness, NP, NP-Completeness, co-NP, beyond NP, relativized complexity, circuit complexity, alternation, polynomial time hierarchy, parallel and randomized computation, algebraic methods in complexity theory, communication complexity. Prerequisite: Computer Science 334 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI535 - Algorithmic Game Theory

Course Description
Study of algorithmic aspects of basic questions in microeconomics. Topics include solution concepts for games, a mechanism design, and auction theory, social choice, and resource allocation and fairness. Recommended prerequisites: Strong foundation in algorithms at the level of CompSci 330 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON565 ALGORITHMIC GAME THEORY, MATH571 ALGORITHMIC GAME THEORY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI550 - Advanced Computer Architecture I

Course Description
Fundamental aspects of advanced computer architecture design and analysis. Topics include processor design, pipelining, superscalar, out-of-order execution, caches (memory hierarchies), virtual memory, storage systems, simulation techniques, technology trends and future challenges. Prerequisite: Computer Science 250 or Electrical and Computer Engineering 350 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE552 ADV COMPUTER ARCHITEC I

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI553 - Compiler Construction

Course Description
Covers the fundamentals of compiler design. Students will develop a working compiler, writing all stages required to take source code as input and produce working assembly as output: lexical analysis, parsing, type checking, translation to intermediate representation, instruction selection, liveness analysis, and register allocation. Students are expected to have a strong programming background prior to taking this course, as writing a compiler is a significant programming task. Prerequisites: Electrical and Computer Engineering 250L or Computer Science 250 or (ECE 550D and ECE 551D).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE553 COMPILER CONSTRUCTION

COMPSCI554 - Fault-Tolerant and Testable Computer Systems

Course Description
Technological reasons for faults, fault models, information redundancy, spatial redundancy, backward and forward error recovery, fault-tolerant hardware and software, modeling and analysis, testing, and design for test. Prerequisite: Electrical and Computer Engineering 250D or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE554 FAULT-TOLERANT/COMP SYS

COMPSCI555 - Probability for Electrical and Computer Engineers

Course Description
Basic concepts and techniques used stochastic modeling of systems with applications to performance and reliability of computer and communications system. Elements of probability, random variables (discrete and continuous), expectation, conditional distributions, stochastic processes, discrete and continuous time Markov chains, introduction to queuing systems and networks. Prerequisite: Mathematics 216.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE555 PROBABILITY ELEC AND COMP EGRS

COMPSCI557 - Computer Architecture and Hardware Acceleration

Course Description
This course is a graduate-level seminar in computer architecture with special topics in hardware acceleration. This course surveys the landscape of hardware acceleration from historical contexts to recent trends in system designs spanning a collection of architectural techniques (e.g., stream processing, dataflow architecture, parallelism applied to acceleration) and a variety of application domains (e.g. GPU, ML, Database, Graph, Genomics). This course also covers the taxonomy of accelerators, the hardware-software co-design of accelerators, and the deployment of accelerators using the AWS cloud. Prerequisite: Computer Architecture (COMPSCI 250D/ECE 250 or COMPSCI 550/ECE 552) and Digital Logic Design (COMPSCI 350/ECE 350 or ECE 550) or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE557 COMP ARCH & HW ACC

General Education Curriculum Codes
R - (R) Research, QS - (QS) Quantitative Studies

COMPSCI561 - Computational Sequence Biology

Course Description
Introduction to algorithmic and computational issues in analysis of biological sequences: DNA, RNA, and protein. Emphasizes probabilistic approaches and machine learning methods, e.g. Hidden Markov models. Explores applications in genome sequence assembly, protein and DNA homology detection, gene and promoter finding, motif identification, models of regulatory regions, comparative genomics and phylogenetics, RNA structure prediction, post-transcriptional regulation. Prerequisites: basic knowledge algorithmic design (Computer Science 532 or equivalent), probability and statistics (Statistical Science 611 or equivalent), molecular biology (Biology 118 or equivalent). Alternatively, consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB561 COMPUTATIONAL SEQUENCE BIOLOGY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

COMPSCI562 - High-Resolution Cryo-Electron Microscopy Image Analysis

Course Description
Cryo-electron microscopy (EM) is a Nobel Prize winning technique to determine the structure of proteins and protein complexes at molecular resolution. Computational imaging aspects of cryo-EM, including image enhancement, reconstruction, classification and burst movie processing used to determine the high-resolution structure of proteins in 3D. Overview of the structure determination pipeline, focusing primarily on the data analysis aspects of the technique including the application of machine learning and deep learning strategies to extract atomic resolution information from millions of noisy images of proteins. Recommended prerequisite: Programming experience.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOCHEM562 CRYO-EM IMAGE ANALYSIS, CBB562 CRYO-EM IMAGE ANALYSIS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI564 - Edge Computing

Course Description
A seminar-format examination of design principles and recent advances in edge computing, a distributed networked system architecture that places computing and storage at multiple locations between the user and the cloud. The class covers edge computing platforms, edge-adapted algorithms, and the use of edge in mobile and Internet of Things systems and applications. The class focuses on in-depth examinations of key scientific advances in the field. Students complete and present a research-based project, individual or team-based. Prerequisite: ECE/COMPSCI 356 or ECE/COMPSCI 350L or ECE 353/COMPSCI 310 or Graduate Standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE654 EDGE COMPUTING

COMPSCI565 - Modern Optimization for Statistical Learning

Course Description
Introduce several modern optimization algorithms which are useful in statistics and machine learning problems from a computational perspective. As most statistics and machine learning problems can be formulated as optimization problems, it is important for students to have a powerful toolbox of optimization algorithms. After taking the course, students are expected to acquire reasonable working skills to applying different algorithms to solve optimization problems practically. Prerequisite: Students are expected to have reasonable working knowledge on probability and linear algebra. Taking a programming/computing in the past is helpful, but not required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

COMPSCI570 - Artificial Intelligence

Course Description
Design and analysis of algorithms and representations for artificial intelligence problems. Formal analysis of techniques used for search, planning, decision theory, logic, Bayesian networks, robotics, and machine learning. Prerequisite: Computer Science 201 and Computer Science 330.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI571D - Probabilistic Machine Learning

Course Description
Introduction to concepts in probabilistic machine learning with a focus on discriminative and hierarchical generative models. Topics include directed and undirected graphical models, kernel methods, exact and approximate parameter estimation methods, and structure learning. Prerequisite: Linear algebra, Statistical Science 250 or Statistical Science 611.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA561D PROBABILISTIC MACHINE LEARNING, ECE682D PROBABILISTIC MACHINE LEARNING

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI572 - Introduction to Natural Language Processing

Course Description
Introduction to the modern methodologies underlying natural language processing, with a focus on machine learning and deep learning. Topics include language modeling, classification, generative and discriminative models of sequences and trees, and semantics. The course will also cover important NLP applications, such as question answering, machine translation, and summarization. Prerequisites: undergraduate machine learning (COMPSCI 370 or 371) or statistical inference (STA 250D / MATH 342D), probability (MATH 230 / STA 230), linear algebra (MATH 221, 218 or 216), and programming in python.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI574 - Deep Learning Fundamentals

Course Description
An introductory deep learning course, which emphasizes the fundamental algorithmic advances that have made modern deep learning possible, including forward- and reverse-mode automatic differentiation and stochastic optimization. The course will also cover standard deep learning architectures such as convolutional networks, recurrent networks, and transformers, and their applications to computer vision, natural language processing, speech processing, and reinforcement learning. Recommended prerequisites: undergraduate-level multivariable calculus, linear algebra, probability, and machine learning, and comfort with programming in python.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI581 - Computer Security

Course Description
Principles of securing the creation, storage, and transmission of data and ensuring its integrity, confidentiality, and availability. Topics include access control and authentication in distributed systems; cryptography and cryptographic protocols (mainly key exchange protocols); user authentication; software vulnerabilities and software engineering to reduce vulnerabilities; firewalls and related technologies; technologies to support online privacy; and selected advanced topics. Prerequisite: Computer Science 201 and 230 and (210 or 250).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI582 - Cryptography

Course Description
Introduction to the design and analysis of cryptographic algorithms. Topics include basics of abstract algebra and number theory; symmetric and asymmetric encryption algorithms; cryptographic hash functions; message authentication codes; digital signature schemes; elliptic curve algorithms; side-channel attacks; and selected advanced topics. Prerequisite: COMPSCI 230 or equivalent or graduate standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE656 CRYPTOGRAPHY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI583 - Applications in Data and Materials Science

Course Description
AI principles will be applied to a series of materials science example problems, each taught in a module by an expert in materials science or data science. Each module will span 2-3 weeks, demonstrating an array of data science/AI methods in unique materials case studies in advancing discovery or design principles. Prerequisites: ME 221 or equivalent, introductory machine learning course.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME582 APPL IN DATA & MATERIALS SCI

COMPSCI584 - Foundations of Blockchains

Course Description
Blockchains form a key infrastructure for decentralizing trust from a single entity to multiple different entities. Many fields such as finance, supply chain industry, and the design of central bank digital currencies today are considering the use of blockchains to decentralize trust. At a high level, blockchain consists of stack of three key layers: 1) Consensus - agreement among parties 2) Scalability, and 3) Application layer. In this course, we will learn about the foundations that enable each of these layers. Prerequisite: CompSci 230/Discrete Math; CompSci 210 Computer Systems or CompSci 250 Computer Architecture. CompSci 330 Algorithms is helpful but not required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

COMPSCI585 - Secure Software Systems

Course Description
Focus on architectural approaches to building secure, trustworthy software systems. Motivated by a discussion of real-world threat models and vulnerabilities. Analyzes enabling mechanisms (e.g., trusted hardware) in terms of abstractions, implementations, security guarantees, and hardware-software decomposition. Surveys systems across a wide range of application scenarios. Briefly considers other approaches to improving the security of software systems (e.g., formal verification). Primarily driven by reading and discussing research papers along with a research project. Prerequisite: Operating Systems (CompSci 310 or equivalent).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI586 - Human-Centered Security and Privacy

Course Description
This course will introduce several security and privacy topics that have strong human factors component. Some of the themes that we cover throughout this course include overview of User Research Methods and Ethics, Equity and Inclusivity in Security and Privacy, Challenges In Designing Usable Security and Privacy Tools, Security and Privacy Education and Awareness, and Human-Centered Security and Privacy in Emerging Technologies. This course includes weekly reading commentaries, a midterm exam, and a final group research project. Recommended prerequisite: user research methods and CompSci 201 or equivalent programming experience.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL586 USABLE SECURITY AND PRIVACY, ISS586 USABLE SECURITY AND PRIVACY, ECE657 USABLE SECURITY AND PRIVACY

COMPSCI587 - Language-Based Security

Course Description
This course explores methods for using programming languages and language semantics to enforce security. We will cover the techniques (e.g., security type systems, runtime monitoring, machine-checked proof and Hoare logic) as well as their applications to enforcing security (e.g., information flow security, program verification, machine-code verification, hardware security, quantitative security measures, differential privacy). We will read papers for each topic in this course.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI590 - Advanced Topics in Computer Science

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

COMPSCI590D - Advanced Topics in Computer Science

Course Description
Different advanced topics in Computer Science.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

COMPSCI630 - Randomized Algorithms

Course Description
Models of computation, Las Vegas and Monte Carlo algorithms, linearity of expectation, Markov and Chebyshev inequalities and their applications, Chernoff bound and its applications, probabilistic methods, expanders, Markov chains and random walk, electric networks and random walks, rapidly mixing Markov chains, randomized data structures, randomized algorithms for graph problems, randomized geometric algorithms, number theoretic algorithms, RSA cryptosystem, derandomization. Prerequisite: Computer Science 532.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI632 - Approximation Algorithms

Course Description
Cover traditional approximation algorithms with combinatorial and linear programming techniques; extended survey of cut problems and metric embeddings; embeddings, dimensionality reduction, locality sensitive hashing, and game theory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI634 - Geometric Algorithms

Course Description
Models of computation and lower-bound techniques; storing and manipulating orthogonal objects; orthogonal and simplex range searching, convex hulls, planar point location, proximity problems, arrangements, linear programming and parametric search technique, probabilistic and incremental algorithms. Prerequisite: Computer Science 532 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB634 GEOMETRIC ALGORITHMS

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI638 - Graph Algorithms

Course Description
This is an advanced course in theoretical computer science covering some of the most influential work in graph algorithms. Given the broad impact that graph algorithms have had on the general algorithmic toolkit, this course also provides exposure to many key techniques that have been developed in algorithmic theory. Specific topics covered include network flows, graph connectivity, spectral graph theory, and network design algorithms. Recommended prerequisite: Computer Science 532 or an equivalent course in algorithms at a graduate level.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI650 - Advanced Computer Architecture II

Course Description
Parallel computer architecture design and evaluation. Design topics include parallel programming, message passing, shared memory, cache coherence, cache coherence, memory consistency models, symmetric multiprocessors, distributed shared memory, interconnection networks, and synchronization. Evaluation topics include modeling, simulation, and benchmarking. Prerequisite: Computer Science 550 or Electrical and Computer Engineering 552 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE652 ADV COMPUTER ARCHITEC II

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI653 - Human-Centered Computing

Course Description
This course addresses the importance of the human-computer interface in the design and development of things that people use. Many of the perceptual, cognitive, and social characteristics of people, as well as methods for learning more about the people, are covered. The capabilities and limits of computers and other related systems are discussed as they relate to the impact on design and implementation decisions. The course consists of a semester-long project that steps through the various stages of design. This semester's project will be reimaging on campus mental health management. Prerequisite: Computer Science 307D or 308 or Electrical and Computer Engineering 651.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE653 HUMAN-CENTERED COMPUTING

COMPSCI655L - Full-Stack IoT Systems

Course Description
This course focuses on the principles and applications of full-stack Internet-of-Things (IoT). It covers the hardware and software components of building cyber-physical systems (CPS) for IoT applications, including embedded platforms with various sensors and actuators, wireless and wired networks, cloud service, and platforms, data visualization and analytics, and end-to-end IoT applications. This course includes lab sessions and group projects, where students create and build working CPS/IoT systems. Prerequisite: Computer Science 210D, Computer Science 250D, Electrical & Computer Engineering 250D, or Electrical & Computer Engineering 550D.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE655L FULL-STACK IOT SYSTEMS

COMPSCI663 - Algorithms in Structural Biology and Biophysics

Course Description
Introduction to algorithmic and computational issues in structural molecular biology and molecular biophysics. Emphasizes geometric algorithms, provable approximation algorithms, computational biophysics, molecular interactions, computational structural biology, proteomics, rational drug design, and protein design. Explores computational methods for discovering new pharmaceuticals, NMR and X-ray data, and protein-ligand docking. Prerequisites: students should have some familiarity with algorithms, and a basic knowledge of molecular biology. Alternatively, consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB663 ALGORITHMS IN STRUCTURAL BIOL

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences, (QS) Quantitative Studies

COMPSCI671D - Theory and Algorithms for Machine Learning

Course Description
This is an introductory overview course at an advanced level. Covers standard techniques, such as the perceptron algorithm, decision trees, random forests, boosting, support vector machines and reproducing kernel Hilbert spaces, regression, K-means, Gaussian mixture models and EM, neural networks, and multi-armed bandits. Covers introductory statistical learning theory. Recommended prerequisite: linear algebra, probability, analysis or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA671D THEORY & ALG MACHINE LEARNING, ECE687D THEORY & ALG MACHINE LEARNING

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

COMPSCI675D - Introduction to Deep Learning

Course Description
Provides an introduction to the machine learning technique called deep learning or deep neural networks. A focus will be the mathematical formulations of deep networks and an explanation of how these networks can be structured and 'learned' from big data. Discussion section covers practical applications, programming, and modern implementation practices. Example code and assignments will be given in Python with heavy utilization of PyTorch (or Tensorflow) package. The course and a project will cover various applications including image classification, text analysis, object detection, etc. Prerequisite: ECE 580, ECE 681, ECE 682D, Statistical Science 561D, or Computer Science 571D.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE685D INTRO TO DEEP LEARNING

COMPSCI676 - Advanced Topics in Deep Learning

Course Description

Focus on advanced topics in deep learning, particularly methodological methods. This includes discriminative models (e.g., infinite/infinitesimal/physics-informed neural networks), generative models (normalizing flows, graphical models, Bayesian Neural Networks, non-parametric approaches), and topics on inference (e.g., exact and approximate inference methods). Assignments will provide an opportunity to implement techniques. Prerequisite: ECE 685D.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE689 ADV TOPICS IN DEEP LEARNING

COMPSCI701S - Introduction for Graduate Students in Computer Science

Course Description

Introduction for graduate students in computer science. Topics for discussion include: computer science as a research discipline, views of what constitutes a research contribution, approaches to research in different subfields, tools and methodologies, publishing and presenting research results, the role of computer science as an 'amplifier' in other sciences, ethical and policy issues, the information technology industry, grants and funding, and guidelines for success as a graduate student and as a scientist.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

COMPSCI703 - Programming Interview Skills and Practice

Course Description

Techniques and best practices for solving the kind of programming and algorithmic problems typically part of technical interviews. Common genres of problems, methods for solving them, engaging peers and interviewers in the process of solving problems. Students will be expected to participate in leetcode, hackerrank, and APT problems, with role-playing, peer review, and discussion of what works and does not work.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

COMPSCI704 - Computer Science Masters Program Career Preparation and Development

Course Description

Class for first-year Computer Science masters students offering informational seminars from experts inside and outside of Duke University, including faculty, industry professionals, career center staff, and administrators from institutes and centers around Duke. Students learn about the various types of internships and career options, understand methods and strategies for applying for jobs/internships, learn how to create/improve their resumes, hone their presentation skills (in person and virtual), receive leadership coaching, and more. Recommended prerequisite: First-semester Computer Science Masters students.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

COMPSCI762 - High-Dimensional Statistics and Machine Learning

Course Description
The goal of this course is to provide motivated Ph.D. and master's students with background knowledge of high-dimensional statistics/machine learning for their research, especially in their methodology and theory development. Discussions cover theory, methodology, and applications. Selected topics in this course include the basics of high-dimensional statistics, matrix and tensor modeling, concentration inequality, nonconvex optimization, applications in genomics, and biomedical informatics. Knowledge in probability, inference, and basic algebra are required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOSTAT915 HIGH-DIMENSIONAL STATISTICS, STA915 HIGH-DIMENSIONAL STATISTICS

COMPSCI763 - Graphical Models for Biological Data

Course Description
Introduction to probabilistic graphical models and structured prediction, with applications in genetics and genomics. Hidden Markov Models, conditional random fields, stochastic grammars, Bayesian hierarchical models, neural networks, and approaches to integrative modeling. Algorithms for exact and approximate inference. Applications in DNA/RNA analysis, phylogenetics, sequence alignment, gene expression, allelic phasing and imputation, genome/epigenome annotation, and gene regulation. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOSTAT914 GRAPHICAL MODELS, CBB914 GRAPHICAL MODELS

COMPSCI791 - Internship

Course Description
Student gains practical computer science experience by taking a job in industry, and writes a report about this experience. Requires prior consent from the student's advisor or from the director of graduate studies. For PhDs, internship may be taken in Fall, Spring, or Summer semesters and may be repeated with consent of the advisor and the director of graduate studies. Master's students may do an internship after completion of first year; academic year internships for master's students may be approved only after consultation with the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

COMPSCI891 - Special Readings in Computer Science

Course Description
Special individual readings in a specified area of study in computer science. Approval of Director of Graduate Studies required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

CREOLE590S - Special Topics in Haitian Creole Studies

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CREOLE701 - Elementary Creole I

Course Description
Introduction to essential elements of Haitian Creole or Kreyòl language and aspects of Haitian culture. First of two-semester sequence of elementary Haitian Creole or Kreyòl, the course provides practice in understanding, speaking, reading, and writing, culturally contextualized through units on health care, Haitian women's rights issues, and unpaid child servants (restavèk). Students will acquire enough vocabulary and idioms to be able to interact with Haitians. Language instruction will be complemented through additional class meetings with the co-Director of the Haiti Lab and submission of a paper in Creole on aspects of students' Haiti-related research. Taught in Creole. No prerequisite.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CREOLE702 - Elementary Creole II

Course Description
Second semester of elementary Haitian Creole provides essential elements of Creole language and aspects of Haitian culture. Students develop speaking, listening, reading, and writing skills and are exposed to different aspects of Haitian culture through films, storytelling, games, music, and proverbs. Pre-requisite: Creole 701 or a comparable level of previous Creole language experience, such as Duke Engage experience in Haiti or familial background in Creole. Language instruction is complemented through additional class meetings and submission of a paper in Creole on aspects of students' Haiti-related research. Taught in Creole.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CREOLE703 - Intermediate Creole I

Course Description

First semester of intermediate Haitian Creole or Kreyòl. This course moves beyond survival skills in Creole to more complex social interactions and expressions of analysis and opinion. Intermediate skills in understanding, speaking, writing, reading will be contextualized within a broad range of issues such as rural life in Haiti, religion, frenchified Creole vs popular Creole, through texts, poems, and excerpts taken from novels in Haitian Creole. Students will learn to carefully follow contemporary events and debates in Haitian culture using internet resources in Creole. Prerequisite: Creole 702 or equivalent. Taught in Haitian Creole.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

CREOLE704 - Intermediate Creole II

Course Description

Second semester of Intermediate Creole. Prerequisite: Creole 703 or equivalent.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

CREOLE705 - Advanced Haitian Creole 1

Course Description

This class is designed to help students sharpen their listening, speaking, reading, and writing skills in Kreyòl at an advanced level while exploring different themes related to Ayiti such as literature(s), language(s), school system in Haiti, history, and different types of Haitian music. In addition, students will be able to work on different songs and music groups that left their mark on Haitian music for the past 50 years as well as Haitian films. Prerequisites: Creole 704 or completion of the Advanced Intermediate Level at any institution that offers Intensive Haitian Creole class or any native speaker who is fluent in reading and writing the language.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

CREOLE706 - Advanced Haitian Creole 2

Course Description

This class is designed to help students sharpen their listening, speaking, reading and writing skills at an advanced level so that they will be able to make themselves understood by native speakers while using proverbs, historical references, common idiomatic expressions, and even simple jokes. To do so, students will explore the archives of Radio Haiti-Inter available at Duke University which cover a range of significant themes that are linked with current events. All of these explorations will be supported by films, songs, poems, and paintings that go with each theme that will be studied in class. Prerequisite: Creole 705 Advanced Haitian Creole 1.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:
3

Max Units:
3

CREOLE791 - Special Readings

Course Description
Supervised independent study and reading. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH500S - Theories of the Image: The Image in Walter Benjamin

Course Description
Returning to Walter Benjamin's Art Work essay and its various sources and revisions, this course will discuss recent engagements with Benjamin's work in cinema, photography, and visual and media studies and will attempt to understand the role and functions of the faculty he coins 'the mimetic' in modern culture. Readings will be drawn from the English translation of Benjamin's Selected Writings, volumes 1-4, and including his work on photography, history, surrealism and his reviews of writers such as Charles Baudelaire. Readings will also include some of Benjamin's own primary sources, such as the writings of Kracauer as well contemporary discussions of Benjamin's work in academic journals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT612S THEORIES OF THE IMAGE, GERMAN512S THEORIES OF THE IMAGE, ROMST612S THEORIES OF THE IMAGE, VMS612S THEORIES OF THE IMAGE, CINE612S THEORIES OF THE IMAGE

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CULANTH501S - Anthropology and History

Course Description
Recent scholarship that combines anthropology and history, including culture history, ethnohistory, the study of mentalite, structural history, and cultural biography. The value of the concept of culture to history and the concepts of duration and event for anthropology. Prerequisite: major in history, one of the social sciences, or comparative area studies; or graduate standing.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY572S ANTHROPOLOGY AND HISTORY, ROMST521S ANTHROPOLOGY AND HISTORY

CULANTH502S - Race, Class, and Gender in the University

Course Description

The American university generates some of the most influential ideas and policies on the planet. It is the product of culture-specific ideas and aspirations, as well as a long history of selective social exclusion, inclusion, and transformation. Yet most of us take for granted the culture-specific forms of reasoning, discourses, political loyalties, administrative practices, social relationships, and financial flows that constitute it. Through theoretical, historical, ethnographic, statistical, policy-oriented, novelistic, and journalistic accounts, we will de-naturalize and historicize the power/knowledge that not only forms us but also, in many ways, rules the world.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

HISTORY513S THE UNIVERSITY AS A CULTURE, SOCIOL502S THE UNIVERSITY AS A CULTURE

General Education Curriculum Codes

(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

CULANTH503S - The Black Radical Tradition

Course Description

Cedric Robinson's 'Black Marxism' (1983) has long been taken as foundational to the Black Radical Tradition and specifically Black people's enduring resistances to racial oppression. For Robinson such resistances have not only been legible as class struggle, but as forms of political, spiritual, artistic, intellectual opposition and underground activism. What his work has left unaddressed is the nature of such resistances in gendered terms and in terms that move beyond the United States. This course attempts to expand the definition of what is 'Black' 'Radical' and a 'Tradition' conjoining histories of struggle in South Africa and the US while attentive to their gendered sensibilities.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AAAS503S THE BLACK RADICAL TRADITION, RELIGION503S THE BLACK RADICAL TRADITION, POLSCI589S THE BLACK RADICAL TRADITION, ICS504S THE BLACK RADICAL TRADITION

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

CULANTH504S - Graphic Ethnography: Comics as Research

Course Description

Comics offer researchers unique ways to portray time, memory, and speech on the page. In this course, we read global works of graphic ethnography, graphic medicine, comics journalism, and comics theory. We analyze the building blocks of the page and panel, ethics of drawn representations, and more, putting what we study into practice. The final project is a short Durham-based graphic ethnography; graduate students may, instead, integrate graphic narrative into a research project of their own. Interest in visual thinking is required, but no drawing background–comics can employ a wide array of representational strategies. Prerequisite: ICS 195, CULANTH 101D, VMS 202, or a 100-level DOCST course required for undergraduate students.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

4

Max Units:

4

Crosslisted Courses
ICS502S GRAPHIC ETHNOGRAPHY, VMS503S GRAPHIC ETHNOGRAPHY, DOCST512S GRAPHIC ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CULANTH507S - Atlantic Worlds Workshop

Course Description
This seminar explores the ties of interdependence between Europe, Africa, and the Americas that created an 'Atlantic world' beginning in the fifteenth century. Major topics include European settlement and colonization of the Americas; cultural exchanges among Europeans, Africans, and Indigenous peoples; the rise of the Atlantic slave trade and the transformative effects slavery had on Atlantic societies; the aspirations of the democratic revolutions of the late eighteenth century; and the abolition of slavery and the limits of emancipation. The course is connected to an ongoing workshop series that will give students the opportunity to regularly interact with prominent visiting scholars who will present their current research. Open to both graduate students and advanced undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
HISTORY507S ATLANTIC WORLDS WORKSHOP, AAAS507S ATLANTIC WORLDS WORKSHOP, LIT508S ATLANTIC WORLDS WORKSHOP, ICS507S ATLANTIC WORLDS WORKSHOP

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

CULANTH511S - The Fetish: The Role of Things in Spiritual, Economic, and Sexual Life

Course Description
This course explores the social relationships produced by debates over the value and agency of material things ranging from the cross and the Eucharist to black leather, fur, dildos and even the more mundane commodities through which capitalism and socialism have defined their rivalry. Thus we will examine the highly charged role of things in religion, economics, and spiritualized erotic relationships, as well as the centrality of the fetish concept in the mutual transformation of modern Africa and the West.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS512S THE FETISH, RELIGION511S THE FETISH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

CULANTH520 - Eco-Media: Studies in Planetary Futures

Course Description
This course explores film, photography, online media, museum and artistic productions about the contemporary planetary ecological crisis. Visual materials will focus on climate change, environmental activism, plastic and nuclear waste, digital rubbish, 'cancer alleys' and 'cancer villages,' pollution and toxic environments, among other topics. Course readings will introduce students to debates about the Anthropocene, post-human natures, species extinction, multi-species care, geo-engineering, and planetary futures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT522 ECO-MEDIA, VMS520 ECO-MEDIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations, (SS) Social Sciences

CULANTH520S - Eco-Media: Studies in Planetary Futures

Course Description
This seminar explores film, photography, online media, museum and artistic productions about the contemporary planetary ecological crisis. Visual materials will focus on climate change, environmental activism, plastic and nuclear waste, digital rubbish, 'cancer alleys' and 'cancer villages,' pollution and toxic environments, among other topics. Course readings will introduce students to debates about the Anthropocene, post-human natures, species extinction, multi-species care, geo-engineering, and planetary futures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT522S ECO-MEDIA, VMS520S ECO-MEDIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

CULANTH521S - Black Ethnographers

Course Description
What is ethnography, broadly defined? How is a scholar's ethnographic product shaped by their racialized experience? We will use books, articles, podcasts, documentaries, music, dance, and poetry for an in-depth study of the various ways that U.S.-based Black intellectuals in the social sciences have used ethnography to make sense of and theorize our and their everyday social worlds. We will pay special attention to questions of sexism, anti-Black racism, white supremacy, and colonialism, as these become relevant to the scholars' work, relationships to their disciplinary homes, and lived experiences.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS521S BLACK ETHNOGRAPHERS, GSF521S BLACK ETHNOGRAPHERS, SOCIOL521S BLACK ETHNOGRAPHERS, ICS521S BLACK ETHNOGRAPHERS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

CULANTH525S - Culture, Power, History

Course Description
Debates in cultural theory and anthropology: identity and nationalism, memory and tradition, globalization, and poststructuralist, feminist and postcolonial theory. Some previous coursework in anthropology and or cultural theory recommended.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ICS525S CULTURE, POWER, HISTORY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (SS) Social Sciences

CULANTH526S - Critical Genealogies of the Middle East: An examination of the canon of Middle East scholarship

Course Description
This course provides an in-depth investigation into the various theoretical and textual traditions that inform interdisciplinary Middle East studies with a focus on History, Cultural Studies, Religion and Social Sciences. Interdisciplinary in scope, the course will maintain a disciplinary rigor so that students learn how knowledge is produced within the framework of specific disciplines. Foci include social history, literary theory, critical visual studies, and postcolonial theory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES620S GENEALOGIES OF THE MIDDLE EAST

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations, (SS) Social Sciences

CULANTH527S - Columbus: A Global History

Course Description
This seminar returns to the global framework of Columbus's encounters with what would come to be called the New World. Students will study medieval conceptions of the world in maps, cosmographies, and travel literature as well as developments in China and the Americas before 1492. Our central focus will be texts by Columbus and his contemporaries: Peter Martyr d'Anghiera, Amerigo Vespucci, Martin Waldseemüller, Bartolomé de las Casas, Peri Reis, Mehmed el-Su'udi, and Jacopo ha-Kohen. Attention will be given to slavery, colonization, evangelization, prophecy, apocalypticism, and resistance. We will also explore the economic and intellectual consequences of Columbus's voyages across time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY526S COLUMBUS: A GLOBAL HISTORY, MEDREN554S COLUMBUS: A GLOBAL HISTORY, ROMST526S COLUMBUS: A GLOBAL HISTORY, RELIGION524S COLUMBUS: A GLOBAL HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations

CULANTH529S - Crafting Ethnography

Course Description
This seminar examines the status of ethnography as both research endeavor and narrative craft. Ethnography is at a crossroads: it both continues to be debated as cultural anthropology's 'signature' method of inquiry, and yet also is increasingly in demand as a worldview applicable to many other disciplines and professions. If ethnography is in a moment of continual experimentation, what then structures its craft?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ICS526S CRAFTING ETHNOGRAPHY, GSF526S CRAFTING ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

CULANTH530S - Atlantic Worlds

Course Description
Atlantic Worlds examines the conditions under which a specific kind of capitalism emerges in the 21st Century. Organized through speculation and new forms of exploitation beyond the industrial workplace; in prison and military industrial complexes; where debt accrues to a growing global precariat. This new moment in a much longer history of capital is approached in several ways: one, through attention to 1492; two, the legacy of Atlantic slavery; three, current accumulation by dispossession, inclusive of land grab, ecological devastation, and violence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS532S ATLANTIC WORLDS, HISTORY532S ATLANTIC WORLDS, ICS522S ATLANTIC WORLDS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum

CULANTH533 - Geopolitics and Culture: How Russian Culture Changed the World

Course Description
Examination of Russian contributions to advancements in the sciences, mathematics, and the arts (visual/textual/musical). Special attention is paid to the contributions of Mendeleev (chemistry), Vygotsky and Luria (cognitive and developmental psychology/neuroscience), Lobachevsky (non-Euclidean geometry), Sakharov (nuclear physics, dissident), Kandinsky and Filonov (visual arts), Rachmaninoff, Shostakovich, Stravinsky, Prokofiev (composers), Zamiatin, Jakobson, Lotman, Bakhtin, Voloshinov (semiotics, theories of artistic texts).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN533 GEOPOLITICS AND CULTURE, PUBPOL508 GEOPOLITICS AND CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

CULANTH535S - Race, Racism, and Democracy

Course Description
The paradox of racial inequality in societies that articulate principles of equality, democratic freedom, and justice for all.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS545S RACE/RACISM/DEMOCRACY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

CULANTH539S - Queer China

Course Description
Examines queer discourses, cultures, and social formations in China, Greater China, and the global Chinese diaspora from the late imperial period to the present. Course will focus on cultural representations, particularly literary and cinematic, but will also consider a wide array of historical, anthropological, sociological, and theoretical materials. Not open to students who have taken Asian and Middle Eastern Studies 439.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES539S QUEER CHINA, GSF502S QUEER CHINA, LIT539S QUEER CHINA, VMS539S QUEER CHINA, RIGHTS539S QUEER CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

CULANTH561S - Global Africa

Course Description
Africa's participation in globalization has not simply been a matter of 'joining the world economy.' Rather, Africa's inclusion has been selective, uneven, and partial. This is quite a different proposition than arguing, as many social theorists, economists, and journalists have suggested that the Continent is somehow structurally irrelevant to the process of globalization. This course responds to this debate by retracing the history of globalization, beginning with the Atlantic trade in human beings and concluding with an account of Africa's place in the global circulation of people things, ideas, and currencies in early twenty-first century.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS510S GLOBAL AFRICA, HISTORY561S GLOBAL AFRICA, POLSCI527S GLOBAL AFRICA, ICS510S GLOBAL AFRICA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (SS) Social Sciences

CULANTH562S - African Cities

Course Description
If the predominant mode of development in African cities is informal and unplanned giving rise to new modes of life, livelihood, and leisure beyond the organizing infrastructures of formal architecture and design in reality, the new African urbanism seems to give rise to two distinct conditions of life--the one crisis and the other ingenuity. This course is concerned to think through the paradox of rapid urban growth across the continent--from Lagos and Cairo to Johannesburg and Cape Town--and the fact that such rapid urban growth is taking place without the conventional facilities, infrastructures and technologies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS640S AFRICAN CITIES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

CULANTH565S - Global Critical Race Theory and History: Brazil and the USA

Course Description
Critical Race Theory emerged in US law schools in the 1980s and has inspired young scholars and activists with its focus on the systemic nature of racism entrenched within the U.S. judicial system. Yet CRT has also been relentlessly modern and focused on the U.S.A. Given varying dynamics of racial subalternization and divergent legal systems, how is one to grasp the distinctive features as well as shared similarities between systems of racial domination in the USA and Brazil, two core regions of the New World African Diaspora? More broadly, how might one encompass 'race' and 'race-like' forms of domination in other societies in light of the sweep of history over the past millennia?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY565S GLOBAL CRITICAL RACE THEORY, ROMST565S GLOBAL CRITICAL RACE THEORY, AAAS565S GLOBAL CRITICAL RACE THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

CULANTH568S - Imagining the Global South: The Politics and Praxis of Dreaming

Course Description
Dreaming, imagining, hallucinating are at the heart of how new ways of being and living in the world come about. Through closely reading the ways imagination works as politics and in politics, as theory and as practice in the lives of people in the Global South, this class asks just what is manifested through imagined pasts and futures. Grounded in theory, history and ethnographic spaces, students will challenge the limits of their own imaginations and explore what it might mean when we are really able to dream/hallucinate different version of the worlds we think we live in and the bodies we are told to inhabit.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ICS568S IMAGINING THE GLOBAL SOUTH

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

CULANTH571S - Philosophy in Motion: Corporeality, Gesture, and Movement in Modern Thought

Course Description
In an age where the circulation of knowledge across media is paramount, what role can be ascribed to the mobile body? This seminar will investigate the central role played by the body, movement, and gesture in modern French, Caribbean, and African philosophy. We will examine their relation to questions of aesthetics and politics, as well as theories of community and practices of resistance. We will explore the body as an epistemological interface producing, encoding, and transmitting knowledge. We will also work interdisciplinarily in the fields of cinema and performing arts, addressing each as forms of intelligibility in motion. Taught in English with an optional preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH570S PHILOSOPHY IN MOTION, AAAS570S PHILOSOPHY IN MOTION, DANCE571S PHILOSOPHY IN MOTION, LIT570S PHILOSOPHY IN MOTION, ROMST570S PHILOSOPHY IN MOTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

CULANTH590 - Selected Topics

Course Description
Special topics in methodology, theory, or area.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH590S - Seminar in Selected Topics

Course Description
Same as Cultural Anthropology 590 except instruction provided in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CULANTH605 - East Asian Cultural Studies

Course Description
East Asia as a historical and geographical category of knowledge emerging within the various processes of global movements (imperialism, colonialism, economic regionalism).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES605 EAST ASIAN CULTURAL ST, LIT571 EAST ASIAN CULTURAL ST, ICS605 EAST ASIAN CULTURAL ST

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

CULANTH609S - Transpacific and Global Asia/America: Connecting Divided Histories and Knowledges

Course Description
This theory and methodology course introduces texts in Asian American studies and global and critical Asian Studies through the oceanic and archipelagic lens of the transpacific. Explores historical and disciplinary fault lines among Asian Studies, Asian/American Studies through higher ed, as well as entangled and divided histories of Asia and the Americas. Navigates legacies of colonial, cold war, and postcolonial histories between Asia and the Americas. Centers power dynamics of knowledge formation, translation, circulation across divides in history, journalism, academia, literature, films, digital and art works, gaming, community engagement, museums and archives, and law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES609S TRANSPACIFIC ASIA/AMERICA, AADS609S TRANSPACIFIC ASIA/AMERICA, CINE609S TRANSPACIFIC ASIA/AMERICA, GSF609S TRANSPACIFIC ASIA/AMERICA, ARTHIST609S TRANSPACIFIC ASIA/AMERICA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

CULANTH610S - Africa, Cuba, Brazil: Great Powers of the Black Atlantic

Course Description
Explores shared cultural history of three great populations separated by oceans but linked by slave trade. Course will offer lively, mutually transformative dialogue in religion, music, and political ideas. This case study in the Africanization of the Americas and the Americanization of Africa challenges a range of conventional assumptions about transnationalism, race, class, gender, and their artistic expression.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS610S AFRICA, CUBA, BRAZIL, HISTORY610S AFRICA, CUBA, BRAZIL, ROMST522S AFRICA, CUBA, BRAZIL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

CULANTH611 - Global Mental Health

Course Description
Examination of global mental health from perspectives of culture, public health, epidemiology, human rights, policy, and intervention. Disciplines include cross-cultural psychiatry, medical anthropology, public mental health, and economics. Topics include ethics, stigma, cross-cultural classification of mental health, ethnopsychology, trauma, violence, disasters, and displacement. Populations include children, ethnic minorities, refugees, survivors of complex emergencies, and persons with chronic disease. Course highlights mixed-methods approaches to research and intervention evaluation. Designed for graduate students & advanced undergraduates. Prior research methods course recommended.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GLHLTH660 GLOBAL MENTAL HEALTH, PSY611 GLOBAL MENTAL HEALTH, RIGHTS660 GLOBAL MENTAL HEALTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, NS - (NS) Natural Sciences

CULANTH660 - Health in the African Diaspora

Course Description
Exposes and explores the individual and joint contributions of biological and non-biological factors to health and wellbeing in peoples from various regions and countries of the African Diaspora. The course draws on a variety of disciplines, modes of inquiry, and health problems in comparative analyses of genetic, historical, political, and sociocultural dimensions of the African Diaspora. Course content is not limited to the transatlantic African Diaspora; it spans multiple African Diaspora streams.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS660 HEALTH IN THE AFRICAN DIASPORA, GLHLTH672 HEALTH IN THE AFRICAN DIASPORA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

CULANTH690 - Selected Topics

Course Description
Special topics in methodology, theory, or area.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH690S - Special Topics

Course Description
Special topics in methodology, theory, or area.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH700S - Surveillance, Technology, and Capitalism

Course Description
This class will explore the role of surveillance and technologies of monitoring and control in the world today. We will engage with debates about panopticism and privacy; social media and algorithimic amplification; e-commerce, data harvesting and platform capitalism; cyborgization and human/nonhuman configurations; labor rights and social protest under regimes of corporate and state surveillance; and changing assemblages of race, gender, citizenship and identity. Readings will range across feminist, Marxism and post-Marxism, STS, ethnographic explorations of precarity and the new economy, and literatures about digitality, finance, and biopolitics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT700S SURVEILLANCE AND TECHNOLOGY, SOCIOL700S SURVEILLANCE AND TECHNOLOGY

CULANTH707S - Precarity and Affect

Course Description
Explore the two concepts of precarity and affect in terms of their intersection, overlap, and interface: How is affect experienced and produced under conditions of global capitalism and expanding inequity, risk, and insecurity in social living around the world? The course will tack between theoretical and ethnographic studiers of the two concepts, considering their utility, how they can be expanded in other directions, and what an anthropological approach does, our could, lend to these topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF707S PRECARITY AND AFFECT, LIT707S PRECARITY AND AFFECT, SOCIOL771S PRECARITY AND AFFECT

CULANTH708S - Anthropology of Contact: Contagion, Coloniality, Capital

Course Description
In this course, we will find out what an 'anthropology of contact' can do to advance a critical analysis of culture. Contact is a prerequisite for human existence, and it can also destroy existence. Across various contexts from colonial encounters to contagious disease, we will look at what bodies exchange when they exist in proximity. We will read theoretical, historical, and ethnographic texts. Topics include malaria in the Philippines; sexuality in gentrifying New York; human porosity and toxicity; and labor and liberalism in imperial exchange.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY708S ANTHROPOLOGY OF CONTACT, LIT708S ANTHROPOLOGY OF CONTACT, GSF708S ANTHROPOLOGY OF CONTACT

CULANTH709S - Science, Medicine, and the Body

Course Description
Introduces students to scholarship about the body's complex relations to science, technology and medicine. Examines how embodied knowledges and experiences of pain, disease, injury, and ability relate to forms of gender, sexuality, race, state power, coloniality, and capital. Explores these connections across debates in medical anthropology, science and technology studies, cultural theory, and the medical humanities, while paying close attention to different genres of writing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF709S SCIENCE, MEDICINE, BODY, SCISOC709S SCIENCE, MEDICINE, BODY, GLHLTH709S SCIENCE, MEDICINE, BODY, LIT709S SCIENCE, MEDICINE, BODY

CULANTH710S - Politics of Nature

Course Description
This is a graduate course on the concept of 'nature' in social theory and history. Against the presupposition that social theory has traditionally lacked a conceptual engagement with nature, this class will chart the genealogies of environmental thought that have developed within and through wider transformations of twentieth-century political economy, technology, and politics. The aim of this course is to both resituate contemporary calls for a critical theory of nature that has remained largely indifferent to its own conceptual and historical antecedents; while also developing new research on the history and politics of nature in a world transformed by climate catastrophe.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
HISTORY710S POLITICS OF NATURE, ENVIRON730S POLITICS OF NATURE

CULANTH715S - Nationalism

Course Description
Focuses on anthropological approaches to the nation-state, nationalist movements, and state formation. Examines the dynamic relationships between nations and states, colonial and post-colonial policies, and anti-colonial strategies within a changing global context. Addresses the ways belonging and participation are defined within particular states, as well as how these definitions are socialized through a variety of institutional contexts. Finally, explores the relationships between popular culture and state formation, examining these as dialectical struggles for hegemony.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH716S - Capitalism

Course Description
This course introduces students to some of the debates relating to the current financial crisis—both within and beyond the field of finance itself. Combining media accounts with scholarly critiques of the current structures for money making, this course is primarily committed to theorizing the culture of capitalism in the early 21st Century. The larger inter-disciplinary framework for the course encompasses inter-related fields of inquiry including anthropology, cultural geography, and political economy.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SOCIOL716S CAPITALISM, POLSCI720S CAPITALISM

CULANTH721S - Violence: Anthropological Approaches

Course Description
Anthropologists have long been concerned with questions of violence in many forms: structural violence, everyday violence, state violence, gendered violence, violence and the body, violence and visuality, violence and the built environment, etc. Over the course of the semester, we will study both foundational works on violence from the last century as well as the ways that violence, in its varied forms, has been theorized and narrativized in recent ethnographic texts. Readings from Agamben, Arendt, Bourgois, Butler, Das, Fanon, Farmer, Foucault, Jain, Hoffman, Masco, Said, Scarry, Scheper-Hughes, Tickin, Taussig, Wohl and others.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH726S - Governmentality

Course Description
Governmentality - a concept articulated by the French historian and philosopher Michel Foucault (1926-1984) - has become a key analytic of much recent critical writing in cultural anthropology. Taking governmentality as a point of departure, this graduate seminar will investigate governmentality as an analytical framework oriented towards interpreting our world. We will consider works by anthropologists, and scholars in related fields, who have drawn on Foucault's methods and concepts in relationship to a wide range of socio-political, philosophical and historical thought, and critically engage their attempts to deploy his approach in ethnographic analysis.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH727S - Dissertation Writers' Workshop

Course Description
Weekly seminar for Cultural Anthropology students who have returned from fieldwork and are in the process of writing up their dissertations. Each seminar will focus on a particular aspect of anthropological writing: the introduction and conclusion to a thesis, for example, or when/where/how to lay out methodology, literature review, and positionality. As integrating ethnography and theory is particular to our discipline, emphasis will be placed on examining different strategies, techniques, styles, and tropes for doing this.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH731S - Critical Ethnographies

Course Description
Ethnography has long defined anthropology as a discipline. But what precisely does ethnography mean today at a moment of transnational migration, mobile lifestyles, consumer citizenship, and deterritorialized subjectivities? And how does ethnography work as a (social, political) critique and how to think critically about ethnography if we are to challenge, rather than merely accept, the tenets of 'being there'? In this class, we 1) engage a close reading of a number of ethnographies—both old and new, canonical and experimental—and 2) consider the meta-issue of Ethnography by looking at debates of the 1980s and more recent attempts to theorize a practice and ethics of ethnography.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH735S - Anthropology and History

Course Description
A continuation of History 572S/Cultural Anthropology 501S. Recent scholarship that combines anthropology and history, including culture history, ethnohistory, the study of mentalite, structural history, and cultural biography. The value of the concept of culture to history and the concepts of duration and event for anthropology. Prerequisite: History 535S or Cultural Anthropology 501S.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY850S ANTHROPOLOGY AND HISTORY

CULANTH741S - Globalization

Course Description
'Globalization' is variously described in terms of the integration of markets, the increasing velocity of transactions, the opening up of new geographies for capital accumulation, de-regulation, and so on. This course looks to the Atlantic world as a starting point in understanding the rise of modern capitalism by way of the slave trade, the rise of finance capital, and the circulation of objects, ideas and people. This course goes on to questions relations of debt and dispossession; novel forms of governance and governmentality; flexibility and superfluity; and growing inequalities and constraints of late capitalism.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS741S GLOBALIZATION

CULANTH742S - Nature/Culture

Course Description
What are the frontiers of the nature/culture debates? What is their lineage in cultural and critical theory? And how do these debates unfold in the practice of ethnography and in ethnographic writing? These three questions guide this graduate seminar, whose topic for 2013 will be 'Objects and Environments.' Foundational readings may include works by Strathern, Serres, Canguilhem, Tsing, Bateson, Latour, Haraway, and Barad, and will be put into conversation with a series of recent ethnographies. Seminar participants will be responsible for writing weekly reading notes, guiding course discussions, and writing a final research paper.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH743S - Media and Mediation

Course Description
This graduate seminar introduces students to anthropological scholarship on the politics of media. We begin with classic theoretical works on mass media the early twentieth century and progress to contemporary anthropological scholarship on the interplay between media, culture, and politics. Our seminar will pay particular attention to issues of photography and visuality; media and/of war; technologies of witnessing; the cultural politics of music and sound; media and globalization; social media and grassroots politics. This graduate seminar will focus on professionalizing strategies, culminating in a proto-publishable research paper that draws on class material.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS743S MEDIA AND MEDIATION, ARTHIST743S MEDIA AND MEDIATION

CULANTH744S - Mobility

Course Description
This seminar explores theories (e.g. Locke on portable property), vehicles (boats), travellers (pirates, pilgrims, migrants), media (books, money, gravestones, genealogies) to recognize the phenomenon of mobility and its consequences. The historical expansion of western state and trade forms will be a major theme, contrasted with non-western mobilities. The course emphasises external rather than internal social relations.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH745S - The Anthropology of the Facts of Life

Course Description
Course will explore in detail our understandings of 'facts' and 'life.' Using classic anthropology as well as work in critical science and technology, political philosophy, feminism, and radiology, course will examine relation between nature and culture, how individuals reproduce a society, kinship, and human development.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH746S - Critical Genealogies

Course Description
This course serves as an in-depth investigation into the many different theoretical traditions that inform interdisciplinary feminist studies. Specific foci include Marxist-feminism, poststructuralism, feminist film theory, psychoanalysis, French feminism, postcolonial theory, deconstruction, the Frankfurt school, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES740S CRITICAL GENEALOGIES, GSF740S CRITICAL GENEALOGIES

CULANTH747S - Theorizing Environment

Course Description
Readings in environment, political ecology, and the socio-cultural/political economic construction of space. Rather than the neutral backdrop to human life, space, place, and environment are crucial components to our material and symbolic worlds. This course overviews geographical thought and theory and then explores its use in anthropology and other social scientific disciplines. Authors include: Lefebvre, Harvey, Massey, etc.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CULANTH748S - Infrastructure and/as Ethics

Course Description
Readings in infrastructure, disaster studies, the political ecology of ruin, and the anthropology of information systems and processes. Although infrastructures are often invisible outside of disasters or crises, we center the built environment, structures, and processes as constitutive of our material and symbolic worlds. And we engage the ethical and values that undergird those very processes and structures which undergird society.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH750S - Citizenship

Course Description
In this course, we approach modern citizenship as a form of political belonging that is lived collectively and culturally. Second, we will understand citizenship, not through the legal/constitutional ideal of formal equality but as one modality for the elaboration of social inequality. Finally, we will seek to 'provincialize' the framework of national citizenship by looking to the elaboration of political belonging and rights in transnational circuits of cultural and political exchange.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH751S - Theorizing the Anthropocene

Course Description
Critical engagement with emergent theories of the 'Anthropocene.' This concept is now deployed in eco-apocalyptic scenarios of a dying atmosphere, storms, tsunamis, and earthquakes, melting arctic glaciers, the flooding of coastlines and cities, and the slow, or sudden, death of the biosphere. The term also points to a contentious interdisciplinary and public space, where scholars, activists, and artists reflect upon, document, experiment with, and produce meaning about the end times of carbon-dependent industrialism, urbanization, slow violence and inequality, displacement and environmental refugees, fossil fuel livelihoods and post-carbon futures, and the very meaning of the planet.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CULANTH752S - Anthropology of the State

Course Description
Explores theories of the state, citizenship, government; experiences of being ruled and evasion of state power; infrastructures of state power, including race, political economy, colonialism, border-making, bureaucracy, science and technology; connections of patriotism to patriarchy, gender and sexuality; role of repressive and ideological state apparati.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH753S - Anthropology of Money

Course Description
This course explores the history and theory of money – what money represents, how it circulates, its contemporary and historical transformations – not only in the metropole but also across the global south. Topics include shell currencies, gifts, paperless money, banking, global debt, futures, mobile phone cash transfers in Kenya, Ponzi schemes, microfinance. After exploring classic theories of money, from Adam Smith to Marx and Simmel, we will turn to the anthropological and historical archive to follow money's functions, transmutations and travails, across time and space.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CULANTH790S - Special Topics in Cultural Anthropology

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH790T - Tutorial in Special Topics

Course Description
Under the supervision of a faculty member for two or more students working on related independent projects. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH791 - Special Readings

Course Description
Supervision and guidance of selected readings at an advanced level.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

CULANTH793 - Individual Research in Cultural Anthropology

Course Description

Supervision and guidance of A.M. thesis preparation, Ph.D. dissertation preparation, or other intensive research on a selected problem.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

CULANTH801S - Theories in Cultural Anthropology

Course Description

A two-semester seminar in which the historical development of the field and its modern currents and debates are examined and discussed. The course will also attend to the recent decolonial turn in different global spaces, attend to critiques of histories of racism in the discipline, and new currents animating disciplinary conversations today. Particular topics to be chosen by the instructors.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

CULANTH802S - Theories in Cultural Anthropology

Course Description

This course is the second in a two-semester sequence revised to address what was exposed by the murder of George Floyd (May 25, 2020); the global COVID19 pandemic; and in recognition of the necessary intellectual work to align the discipline with a social reality in tension with a 'Great Books' approach. 'Great Books' alone cannot account for a world connected by histories of empire, settler colonialism, indigenous genocide, white supremacy, racism, and misogyny. Instead we propose a decolonial reading of those traditional texts previously deemed formative to anthropological thought.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

CULANTH803S - Research Methods/ Porfolio Seminar

Course Description

In addition to exploring a range of research methods, students work on their field reading lists and other elements of their portfolios and begin to develop the dissertation proposal. Required course for CA graduate students in the second year.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

CULANTH804S - Grant Writing

Course Description
This course focuses on the development of the dissertation research proposal and the preparation of grant proposals. Required for CA graduate students in the third year.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

CULANTH890 - Advanced Selected Topics

Course Description
Special topics in methodology, theory, or area.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH890D - Advanced Selected Topics

Course Description
Special topics in methodology, theory, or area.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

CULANTH890S - Advanced Selected Topics

Course Description
Special topics in methodology, theory, or area. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

CULANTH790S-02 - Topics in Environmental History

Course Description
The department offers a series of rotating courses, covering various aspects of environmental and natural history. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
HISTORY790S-08 TOPICS IN ENVIRONMENTAL HIST, ENVIRON790S-01 TOPICS IN ENVIRONMENTAL HIST

DANCE561S - Art as Work: Valuing Labor in the Arts

Course Description
Interdisciplinary seminar on work, working identities, and workplace performances in the arts. Enrolled graduates and advanced undergraduates review theories of artistic production, labor, and value across the analytical traditions of cultural labor studies, critical race and feminist studies, dance and performance studies. Analysis of dominant representations of arts labor and entrepreneurship from arts management, administration and policy discourse. Our goal is to highlight institutional pressures that constrain enabling environments for the arts. Culminating research projects analyze and interpret local arts workworlds, including but necessarily students' own.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT525S ART AS WORK, ARTSVIS571S ART AS WORK, VMS571S ART AS WORK, THEATRST561S ART AS WORK

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

DANCE571S - Philosophy in Motion: Corporeality, Gesture, and Movement in Modern Thought

Course Description
In an age where the circulation of knowledge across media is paramount, what role can be ascribed to the mobile body? This seminar will investigate the central role played by the body, movement, and gesture in modern French, Caribbean, and African philosophy. We will examine their relation to questions of aesthetics and politics, as well as theories of community and practices of resistance. We will explore the body as an epistemological interface producing, encoding, and transmitting knowledge. We will also work interdisciplinarily in the fields of cinema and performing arts, addressing each as forms of intelligibility in motion. Taught in English with an optional preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH570S PHILOSOPHY IN MOTION, AAAS570S PHILOSOPHY IN MOTION, CULANTH571S PHILOSOPHY IN MOTION, LIT570S PHILOSOPHY IN MOTION, ROMST570S PHILOSOPHY IN MOTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

DANCE575S - Somatic Movement Arts: Embodied Human Being

Course Description
This course, Somatic Movement Arts: Embodied Human Being combines practice and theory to address aspects of somatic movement education as applied to creative praxis and daily life. Somatic Movement Education is an embodied system of learning which uses movement, touch, imagination, theory, discussion, creative exploration and more to help support our range of responses to environmental and internal stimuli, while deepening our senses of connection and awareness. We will investigate and study the human body as a living, expressive and moving entity underscored by ethical principles foundational to somatic education such as: inclusivity, respect, and non-judgment.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

DANCE590S - Topics in Dance/Embodiment

Course Description
Subjects, areas, or themes embracing a range of approaches to embodiment in arts and humanities areas. Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DANCE665S - Contemporary Dance History

Course Description
A survey course spanning twentieth- and twenty-first-century developments in selected dance forms from around the world, including discussions of dance in its historical, political and cultural context. Readings will focus on dance as a social phenomenon; dance in the form of political activism; dance as a medium of projecting gendered identity and the historical trajectory of dance aesthetics. Discussions will also include postmodernism in dance and the impact of globalization on world dance forms. Invited guest artists.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ICS509S CONTEMPORARY DANCE HISTORY, HISTORY554S CONTEMPORARY DANCE HISTORY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (W) Writing, (ALP) Arts, Lit & Performance, (CZ) Civilizations

DANCE690S - Special Topics in Dance

Course Description
Special topics in dance.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DANCE701S - Choreographic Praxis: Choreography as an Aesthetics of Change

Course Description
Choreography as a practice integrated with how we perceive the world relevant to current social and political processes. Examined through connections to other fields of human knowledge production, in order to recognize and challenge epistemological assumptions inscribed in the act of creation. Explores movement, structures, and dynamics through the experience, discussion, and deconstruction of choreographic methodologies. Choreographic processes that propose new relational structures, approaches to embodiment, and ways of ordering. Readings in system theory, cultural theory, social choreography, anthropology, new technologies, evolution, relational aesthetics, philosophy, and politics. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DANCE703S - Pedagogies of Dance

Course Description
This course will prepare MFA candidates to teach dance technique, performance and other embodied pedagogies to adults/young adults in a college, university, or community setting. Students will critically analyze historical pedagogical materials from a range of approaches/philosophical platforms. Contemporary analyses of embodied pedagogy will help us interrogate questions of agency, power dynamics in the teacher/student relationship, and our personal blind spots as characterized by bell hooks. Through this ongoing reflective process, students will create tools of self-analysis concerning their teaching and its effects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

DANCE707S - Dance Film: Documentary Aesthetics in Dance-Moving Image Practice

Course Description
This course combines theoretical inquiries with production experiences to explore the intersection of documentary aesthetics and dance filmmaking. Students are exposed to both choreographers and filmmakers working in various cultural contexts. They will also take part in the investigation and experimentation of dance-moving image practices that incorporate documentary elements through a series of hands-on activities and exercises. Prior experience and knowledge in dance and video production is helpful but not required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

DANCE710L - Movement Research I

Course Description
The opportunity to work in a multitude of ways with regard to movement and studio practice and to develop an individual approach that serves the student's artistic trajectory. Course includes an introductory intensive 'Excavation Site' workshop, two intensive workshops during the semester, and an individual movement research plan designed by the student in consultation with the instructor. The plan may include personal studio time and/or access to movement courses taught in the Dance Program. Reflection paper required. Participation in the weekly movement research lab is strongly encouraged.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DANCE718S - Movement in Question: Proseminar in Critical Dance Studies

Course Description
This writing-intensive seminar engages graduate students in multiple ways with the interdisciplinary field of critical dance studies. Students will read and analyze foundational texts and theories on dance and movement from global perspectives and rehearse a honed capacity to interpret movement on semiotic, phenomenological, cultural, and material grounds in their writing. Participatory movement workshops integrate adaptive activities that make gaps between textual representation and embodiment visible. This holistic approach throws movement into question and centralizes dance as a critical way of making the world. Zero formal dance experience is required. Graduate students from all backgrounds are welcome.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF718S MOVEMENT IN QUESTION, ARTSVIS718S MOVEMENT IN QUESTION

DANCE762S - The Creation, Performance, and Practice of Speculative Human Order

Course Description
This class seeks to create, and enact alternative poetics of human relations based on expanded individual awareness. The course entails a weekly instructor-led practice of embodied strategies to develop new sensibilities and experiences in moving and relating to others. Students will be active performers in the creation of a 'social choreographic situation' at end of the term. Students will also conceptualize and realize their own individual social choreographic projects. Interdisciplinary discussions, critical thinking, reading, and reflections form an integral part of the class. No previous or specific movement practice is needed, will to physical experimentation is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

DANCE771S - Graduate Seminar: Theories of Corporeality

Course Description
This graduate reading seminar explores theoretical frames for articulating the social, political, cultural, phenomenological and economic significance of the body. Course literature draws significantly although not exclusively from dance and performance research to consider a wide range of approaches to corporeality studies. Required reading, viewing of performance texts, and guest presentations, and workshops draw surgical attention to the body as a discursive site and to performance as a site of embodied power and potential resistance. Students contribute knowledge across a range of graduate writing genres. Course culminates in the creation of an original research project. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MUSIC771S THEORIES OF CORPOREALITY, GSF771S THEORIES OF CORPOREALITY

DANCE787S - Research Methods in Dance

Course Description
Methods used in dance theory, history, ethnography, education and choreography/practice and other disciplines, as appropriate. Interviewing and documentation; examination of issues concerning participatory experience and objectivity in ethnographic research. Student writing in service to thesis proposal.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DANCE790S - Special Topics in Dance/Performance Praxis

Course Description
Special topics in practice-based experimental performance, resulting in public presentation. Specific focus of engagement and performance will vary semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DANCE793S - MFA Proseminar: Professional Practices

Course Description
This seminar is designed for graduate arts students pursuing advanced training at Duke in dance or experimental documentary arts. Students will engage with historical and contemporary issues surrounding arts labor and infrastructure, explore organizational strategies used by guest artists to sustain working livelihoods, and draft and revise professional portfolio materials enabling them to enter communities of practice beyond graduate school. Taught in rotation by core faculty from Duke's two MFA programs, this proseminar encourages artists to reflect on what they need to sustain an enabling environment for their work.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MFAEDA793S MFA PROSEMINAR

DANCE801S - Establishing a Choreographic Practice

Course Description

Choreographic Praxis II: Establishing a Choreographic Praxis. Building on 701s (Choreographic Praxis I), this seminar encourages the creation of choreographic work. Students are encouraged to apply knowledge gathered in Praxis I to explore and establish their creative methodologies. The course offers time, space, and ongoing feedback mechanisms for students' choreographic and interdisciplinary work. Guest lectures and workshops further expand students' creative toolkits. Students actively engage in design and implementation of weekly dance works through course progression with their MFA Thesis Plan in view.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

DANCE810L - Movement Research II

Course Description

Continuation of Movement Research I. The opportunity to work in a multitude of ways with regard to movement and studio practice and to develop an individual approach that serves the student's artistic trajectory. Course includes two intensive workshops on weekends during the semester and an individual movement research plan designed by the student in consultation with their faculty supervisor. The plan may include personal studio time and/or access to movement courses taught in the Dance Program. Reflection paper on their work and discoveries during the semester. Participation in the weekly movement research lab is strongly encouraged.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DANCE891 - Independent Study

Course Description

Individual directed study on advanced graduate level under supervision of a faculty member resulting in an academic or artistic product. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

DANCE971S - Critique

Course Description

Meets weekly to review, discuss and reflect on student work in-depth. Works critiqued will be both works-in-progress as well as finished projects. Guest scholars, visiting artists, and production mentors will join the class at times, bringing an outside perspective to discussions. Collaboration with faculty and students in the allied MFA/EDA Program will be integrated. Second-year MFAEIP students regularly present their creative research and are assigned leadership roles to deliver weekly critiques of the work of their peers.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DANCE989 - Thesis Project - MFA in Dance: Embodied Interdisciplinary Praxis

Course Description
Second-year students enroll in this course with their primary committee advisor to complete their thesis actions and written documentation of movement-based research. Ongoing faculty feedback on creative work and student writing. Student drafts and submits written thesis describing the historical influences, theoretical frameworks, and cultural values that inform their research and detailed descriptions of their creative methodologies and evaluates the outcomes of their thesis design and practical implementation. Open to second-year students with approved Thesis Proposals. Instructor permission required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

DECSCI524 - National Security Simulation: The Arctic, Climate Change and Great Power Competition

Course Description
Students will participate in a national security simulation in which they will have an assigned role as a state or non-state actor and work with teams to develop policy responses to a security crisis that changes and develops over time. The simulation this semester will involve security issues that arise due to the climate change in the Arctic that has opened up sea lanes and other resources that are generating competition for advantage among multiple nations. Participants will be required to grapple with a complex information environment that is polluted with misinformation, manipulation and deception. Instructional weeks on the substantive security issues the simulation addresses will be interspersed with gameplay. No prior experience in national security is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL517 NAT SEC SIM, POLSCI524 NAT SEC SIM

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

DECSCI538 - Introduction to Machine Learning and Text as Data

Course Description
This course serves as an introduction to machine learning and natural language processing. The emphasis is on social science applications, text as data, and the connection between theory and empirical work.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI538 INTRO TO MACHINE LEARNING

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum

DOCST502S - Analog Filmmaking and Darkroom Techniques

Course Description
Investigation of experimental cinematographic techniques and darkroom processes. Exercises and lab experiments to inform a final project. Suggested prerequisite: Cinematic Arts 356S.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE502S ANALOG FILMMAKING AND DARKROOM, VMS502S ANALOG FILMMAKING AND DARKROOM, ARTSVIS502S ANALOG FILMMAKING AND DARKROOM

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

DOCST511 - Documentary and East Asian Cultures

Course Description
Focus on documentary films from various regions in East Asia, including China, Taiwan, Korea and Japan, studying the specific historical and social context of each while attending to their interconnected histories and cultures. Emphasis on the ethical implications of documentary in terms of its deployment of visual-audio apparatus to represent different groups of people and beliefs, values and conflicts, both intra- and inter-regionally in East Asia. Special attention paid to the aesthetics and politics of the documentary form in terms of both its production of meanings and contexts of reception.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES511 DOCUMENTARY/EAST ASIAN CULTURE, ICS513 DOCUMENTARY/EAST ASIAN CULTURE, CINE511 DOCUMENTARY/EAST ASIAN CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

DOCST512S - Graphic Ethnography: Comics as Research

Course Description
Comics offer researchers unique ways to portray time, memory, and speech on the page. In this course, we read global works of graphic ethnography, graphic medicine, comics journalism, and comics theory. We analyze the building blocks of the page and panel, ethics of drawn representations, and more, putting what we study into practice. The final project is a short Durham-based graphic ethnography; graduate students may, instead, integrate graphic narrative into a research project of their own. Interest in visual thinking is required, but no drawing background–comics can employ a wide array of representational strategies. Prerequisite: ICS 195, CULANTH 101D, VMS 202, or a 100-level DOCST course required for undergraduate students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ICS502S GRAPHIC ETHNOGRAPHY, CULANTH504S GRAPHIC ETHNOGRAPHY, VMS503S GRAPHIC ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

DOCST515S - Oral History Methods

Course Description
Oral History sculpts the newest tools available for practitioners of one of the most ancient of the scholarly disciplines. Using technical innovations from the 1963 portable cassette recorder to cutting edge digital tools today, oral historians co-create, archive, analyze, and share stories from people who otherwise historians might 'miss' because most people don't put their materials into archives, don't leave a written record, might not trust institutions like libraries, or plain and simple, don't have access. This course is a seminar for graduate students and advanced History Majors where we immerse ourselves in the methods, controversies, limits, and possibilities of oral history.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY515S ORAL HISTORY METHODS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research

DOCST540S - Memory and Documentary Cinema in Latin America

Course Description
Course focuses on work of several leading Latin American filmmakers from Brazil, Chile, Argentina, and Cuba. Explores problems such as construction of memory in the wake of repressive dictatorships, relationship between revolutionary imagination and urban decay in present day Cuba, cinema's potential as a tool for cross-cultural explorations of memory and time, including relationship between past and present and our understanding of 'contemporary.'

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST540S MEMORY/DOC CINEMA LATIN AMER, VMS540S MEMORY/DOC CINEMA LATIN AMER, LIT544S MEMORY/DOC CINEMA LATIN AMER, LATAMER540S MEMORY/DOC CINEMA LATIN AMER, CINE540S MEMORY/DOC CINEMA LATIN AMER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

DOCST558S - Business Strategies for the Arts and Artists

Course Description
Students will learn professional development skills specific to the artistic fields. Students/Artists will learn to develop business plans, write grant applications, learn negotiation skills, how to present their work to the public, develop artists statements, and develop/maintain websites and portfolios. The course will allow the student to sustain themselves as a practicing artist.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS558S BUSINESS STRATEGIES FOR ARTS, VMS558S BUSINESS STRATEGIES FOR ARTS, THEATRST558S BUSINESS STRATEGIES FOR ARTS

General Education Curriculum Codes
R - (R) Research

DOCST590 - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST590S - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST591 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST592 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST593 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DOCST594 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DOCST620S - Film-philosophers/Film-makers

Course Description
Examines intersections between film, critical theory, and continental philosophy, from standpoint of spectatorship. Focuses on different approaches to film theory from a philosophical prism, and on different philosophers addressing film as a mediated visual interpretation of reality, the world, our own bodies, and societies within which we reside. Addresses film-making as an act of philosophical thought—of thinking about the world and representing subject's position within the world. Topics include, existential phenomenology, Deleuzian metaphysics, feminism, semiotics, political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT620S FILM-PHILOSOPHERS-FILM-MAKERS, CINE622S FILM-PHILOSOPHERS-FILM-MAKERS, VMS622S FILM-PHILOSOPHERS-FILM-MAKERS, ENGLISH620S FILM-PHILOSOPHERS-FILM-MAKERS

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

DOCST640S - Expanded Cinema: Cinema Outside the Movie Theater

Course Description
This project-based course will explore moving image installation practices beyond the movie theater including alternative public spaces, devices, museums, white cubes and back boxes. The course will simultaneously examine relevant artworks in the context of their diverse histories and attendant theories, from early cinema devices, through works termed as Expanded Cinema around the 1970s, to current new media manifestations. Students will focus on developing moving image installation projects of their own, to be realized at various campus locations. Open to seniors and graduate students. Prerequisite: Two 200-level or above photography or film production classes.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS640S EXPANDED CINEMA, CINE639S EXPANDED CINEMA, VMS640S EXPANDED CINEMA, LIT545S EXPANDED CINEMA

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

DOCST690 - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST690S - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST691 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST692 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DOCST693 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DOCST694 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DOCST705S - The Documentary Experience: A Video Approach (A)

Course Description
A documentary approach to the study of local communities through video production projects assigned by the course instructor. Working closely with these groups, students explore issues or topics of concern to the community. Students complete an edited video as their final project. Not open to students who have taken this course as DOCST 105S. Open only to graduate students in the MFAEDA program. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST711S - Video, Art, Politics

Course Description
This class teaches aspects of conceptual video production within a study of historical work by artists responding to still-current political concerns, such as anti-Black police violence, the AIDS pandemic, electoral disenfranchisement and spectacle, and mass incarceration. With attention to the complex relationships between politics and aesthetics, we will consider contemporary video as cinematic form, gallery exhibition, web stream, broadcast television, and social process, or used as act of witness, tactical media intervention, political prank, and legal/physical defense strategy. Classwork includes individual and collective video production and extensive group critique. Graduate requirements will include additional weekly readings and screening, and final reflective writing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE711S VIDEO, ART, POLITICS, ARTSVIS711S VIDEO, ART, POLITICS

DOCST714S - Introduction to Black and White Photography

Course Description
Foundation class in photography utilizing black and white film and a wet darkroom. Shoot, process, and print individual student work throughout the semester. Emphasis on continual visual exploration of meaning and metaphor in the form of regular assignments, slide lectures of important historic and contemporary photographic work, and critiques of each other's work. No textbooks are required, though students will need to budget a comparable amount for supplies and equipment. Open only to graduate students in the MFAEDA program.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

DOCST718S - Sound in Cinema: Sonic Theories in Film and Media

Course Description
Examination of historical and contemporary debates on the impact of sound in film and various media. Exploration of how artists, scholars, and theorists challenge conventional assumptions about the relationship between image and sound, and the normalized separation of elements that privilege visual over sonic experience. Analysis of sound's political, aesthetic, philosophical, and theoretical implications, and the impact of stylistic approaches to sound design and innovation. Graduate-level students are expected to delve deeper into sound's scholarly and conceptual aspects through original research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE718S SOUND IN CINEMA, VMS718S SOUND IN CINEMA, THEATRST718S SOUND IN CINEMA

DOCST725S - Documenting Resistance on Film: The Poor People's Campaign from 1968 to Today

Course Description
This documentary course explores the rich archival landscape and contemporary reverberations of the 1968 Poor People's Campaign, a transformative social movement that radically challenged economic inequality and systemic poverty across racial lines in the United States. Students will develop their research and filmmaking skills through hands-on engagement with historical materials and documentary techniques in order to explore the role of cultural production in movement spaces. Working independently and collaboratively, students will analyze how archives shape our understanding of history, study contemporary creative approaches to documentary, and learn practical skills for film production.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

DOCST726 - The South in Black and White

Course Description
Focus on present-day and historical documentary traditions in American South, with an emphasis on call and response between black and white cultures. The arts and humanities as embedded in particular histories and cultures found in the South, and as performed in music and theater; and portrayed in documentary films, civil rights photography, Southern literature, and historical and autobiographical writing. Includes historical texts, oral histories and testimonies of living persons, along with documentary films, photographs, and writings from people in Durham and elsewhere in the region.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

DOCST726S - The South in Black and White

Course Description
Seminar with focus on present-day and historical documentary traditions in American South, with an emphasis on call and response between black and white cultures. The arts and humanities as embedded in particular histories and cultures found in the South, and as performed in music and theater; and portrayed in documentary films, civil rights photography, Southern literature, and historical and autobiographical writing. Includes historical texts, oral histories and testimonies of living persons, along with documentary films, photographs, and writings from people in Durham and elsewhere in the region.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST730S - Oral History and Storytelling

Course Description
Explore the fields of oral history and public history by participating in a community-based project. Examine a wide variety of sources related to oral history and public history theory and practice including books, articles, digital history projects, exhibits, and guest speakers. Uncover the opportunities, challenges, and controversies associated with these fields. Use this knowledge to create public-facing dissemination of our research in collaboration with a community organization.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY731S ORAL HISTORY AND STORYTELLIN

DOCST733S - Photo Fever: Curating Photo Exhibitions

Course Description
Curation of photography exhibitions and engagement with public audiences. Project-based course explores ways photo- and image-based artists, journalists, scholars, policymakers, and activists use photography to convey personal expression and shape public opinion around contemporary social and political issues. Through field trips to museums and alternative venues, students gain theoretical and practical guidance on presenting photography work to the public, in-person and virtually. Development of editorial publications, programming, and media strategies. Students curate photo exhibitions in campus and community venues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST735S CURATING PHOTO EXHIBITS, ARTSVIS735S CURATING PHOTO EXHIBITS

DOCST734S - Creative Non-Fiction Cinema—Representing The Real

Course Description
The possibilities and contradictions of documentary practices are our starting point for an investigation of historic film and video works that use formally inventive strategies to represent, re-think, interrogate, or effect reality. Students will engage in video production processes, exploring issues such as power relations between maker, subject and viewer, the ability and limits of an image to act as evidence, flows between ethnographic practice and colonial ideologies, and the truth-telling possibilities of fictional invention. Students will screen, read, write, discuss, and complete conceptually focused production exercises using video, photography, text, and/or sound. No prior experience needed. Graduate-level research expected, parameters developed individually.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE733S CREATIVE NON-FICTION CINEMA

DOCST735S - Introduction to Audio Documentary

Course Description
Practicing the research, recording, and digital production of short audio (podcast or public radio-style) documentaries. Through listening in and out of class, exposure to various approaches from journalistic to narrative to artistic. Exploration of audio documentary as a medium for telling stories and examining issues of social and cultural significance and for advancing equity and justice. Substantial, deeply researched, professionally produced audio final project with a minimal length of twenty minutes, and a written essay reflecting on lessons learned about audio documentary as a field of inquiry. Open only to graduate students in the MFAEDA program.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DOCST736S - Color Photography: Fieldwork and Digital Color

Course Description
Field-based course examining color photography as a documentary tool. Students learn about aesthetic and technical foundations of color photography using recent digital technology. Class-conducted intensive examination of the work of historic and contemporary color documentary photographers. Advanced techniques in film scanning, Photoshop, and color pigment printing. Completion of semester-long color photographic project, and final project consisting of production of a series of color pigment prints. Open only to graduate students in the MFAEDA program. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

DOCST751S - Documenting Black Experiences

Course Description
Explores how Black experiences have been documented and how crucial stories woven from real life get told. Students engage wide ranging contemporary and historical materials, including nonfiction, memoir, fiction, documentary and dramatic film, theater, poetry and music. Our aspirations are historical, but with an understanding that academic history, though irreplaceable, barely touches the range of storytelling that makes Black lives not only matter but transform the spaces in which they unfold. Our explorations are political, but in the largest sense—how Black power comes from making higher truth a tool, a weapon and a way of being.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST753S - Cinematography II Graduate

Course Description
Course explores the approaches, strategies, motivations, and creative processes that inform cinematography. Elements of cinematic style, visual imagination, and storytelling are discussed and explored through exercises. Students learn the relationships and responsibilities involved in the art, and are guided in the execution of the various canonical and extraordinary working methods involved in traditional, experimental, and modern cinematography. Graduate students will be required to complete summary written and production work befitting their experience. Suggested prerequisite: CINE 749S.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS753S CINEMATOGRAPHY II, CINE753S CINEMATOGRAPHY II, VMS753S CINEMATOGRAPHY II

DOCST757S - Editing for Film and Video

Course Description
Theory, history, and practice of film and video editing techniques. Exploration of narrative, documentary and experimental approaches to structuring moving image materials, using digital non-linear editing. Course work will include screening, reading, writing, editing exercises, and video production projects, culminating in a final class screening. No prior experience necessary. Graduate students will be required to complete more advanced assignments and/or additional projects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS757S EDITING FOR FILM AND VIDEO, ISS757S EDITING FOR FILM AND VIDEO, CINE757S EDITING FOR FILM AND VIDEO

DOCST765S - The Documentary Turn: Southern Culture

Course Description
In the 20th century, oral history, photography, film and ethnographies brought into existence narratives that would never otherwise have existed. Documentary as a discipline was central to bearing witness. 'The Documentary Turn: Southern Cultures' offers an ongoing conversation focused on the proposition of the 'documentary turn' in the 21st century. Information flows and new technologies have changed the documentary enterprise in fundamental ways that open new possibilities and challenge continuing conventions. The rise of digital platforms, crowd sourced communications, and viral information test the very nature of what documentary practices entail. Open only to graduate students in the MFAEDA program.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST768S - The View Camera: Black and White Large Format Photography

Course Description
Advanced, production-based photography course introduces students to the 4 x 5 large format view camera and its role in the documentary tradition. Learn to operate a view camera and attendant processes and materials to develop black and white sheet film and make silver gelatin contact prints from 4 x 5 negatives. Begins with focus on black and white negatives and contact prints. After demonstration of proficiency, students may optionally work in color film. Students produce a final portfolio of prints from their work throughout the semester. Class meetings consist of lectures, demonstrations, darkroom work, and critique of both process and final images.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS768S THE VIEW CAMERA

DOCST776S - Recycled Cinema

Course Description
Found footage filmmaking, cinematic appropriation, the use of archival materials in documentaries, and current day internet mashups. Covering early cinema, experimental and documentary cinema, television, and the internet. Key emphasis on practice based assignments with a concurrent focus on the historical impact of the field from seminal moments to the contemporary moment through films and readings on the subject. Graduate students in this course will be required to work on an additional final project at a higher level of complexity based on a proposal created in consultation with, and approved by the faculty.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS775S RECYCLED CINEMA, VMS775S RECYCLED CINEMA, CINE775S RECYCLED CINEMA

DOCST779S - Docu-Poetry: Real Life Truths Outside and Inside the Poetic Narrative

Course Description
Investigates written and oral poetry as a mode of documentary storytelling. Engage with contemporary and historical poetry examining real-life, historical events. Investigate relationship between history, documentary, and poetry. Write poems based on research with multiple forms of archival source material and critical interpretation thereof. Open only to graduate students in the MFAEDA program.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

DOCST788S - Expanded Cinema

Course Description
This project-based course explores moving image installations beyond the traditional movie theater, engaging with alternative venues such as public spaces, museums, and gallery environments. Students will study key works and theories from the history of moving image art, from early cinematic devices to the Expanded Cinema movement of the 1970s, and up to contemporary new media practices that will culminate in a research paper. Throughout the course, students will also design and produce their own moving image installation projects culminating in a final exhibition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE788S EXPANDED CINEMA, LIT788S EXPANDED CINEMA

DOCST790 - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST790S - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST791 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST792 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST793 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DOCST794 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST801S - Applied Documentary Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on documentary research, analysis, and interpretation. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, oral histories, films/videos, audio works). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

DOCST850S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, LIT850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

DOCST890 - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST890S - Special Topics in Documentary Studies

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST891 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST892 - Independent Study

Course Description
Supervision and guidance of documentary production-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST893 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

DOCST894 - Research Independent Study

Course Description
Supervision and guidance of research-based, individual topics at the graduate level. Consent of Director of the Center for Documentary Studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

DSCB700 - Classic Papers in Development, Stem Cell Biology and Regeneration

Course Description
The goal of this seminar course is to deepen understanding of the classic findings and advances in the field of development, stem cell, and regenerative biology and to provide a historical view of how these findings affect our approaches in the field today. The course will meet in the fall semester and will consist of both first and second year DSCB students and 20 faculty members who will select papers and facilitate group discussions.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

DSCB720 - Stem Cell Course

Course Description
The course is designed for first-year graduate students to learn the fundamentals of stem cell biology and to gain familiarity with current research in the field. The course will be presented in a lecture and discussion format based on the primary literature. Topics include: stem cell concepts, methodologies for stem cell research, embryonic stem cells, adult stem cells, cloning and stem cell reprogramming and clinical applications of stem cell research. Prerequisites: undergraduate level cell biology, molecular biology, and genetics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MOLCAN730 STEM CELL COURSE, CELLBIO730 STEM CELL COURSE, PHARM730 STEM CELL COURSE

DSCB730 - Hands on Development

Course Description
This class will expose students to basic principles and techniques in development and stem cell biology. Students will spend the afternoon in six different Duke labs learning diverse approaches within different model systems. This is a hands-on lab based course and is designed so that students will interact closely with Duke faculty and students in the different labs. The class is open and required only for first-year DSCB students. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

EAS508 - China Science and Technology Policy and Innovation

Course Description
China's technological rise has become one of the most important developments in the 21st century. This course will focus on an analysis of China's science and technology policy and innovation strategy, with emphasis on the 1978-Present period. The course will examine the transition in technological development from a Soviet -style top-down model to one where market forces play a greater role in driving advances in science and technology. We also will analyze China's increasing emphasis on an innovation driven economic model. Prereqs: basic knowledge of Chinese history, politics, economics and/or culture. Some basic knowledge of macroeconomics. Some knowledge of politics in the US and abroad.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES523 CHINA S&T POLICY & INNOVATION, SCISOC508 CHINA S&T POLICY & INNOVATION, POLSCI523 CHINA S&T POLICY & INNOVATION, PUBPOL512 CHINA S&T POLICY & INNOVATION

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (STS) Sci, Tech, and Society, (SS) Social Sciences

EAS512S - Travel Japan

Course Description
Examines the 2,000-year history of travel to, from, and within Japan. After an overview of the theory and methodologies of travel history, we take a chronological journey from the earliest surviving records of travel to Japan, through the travel literature of Japan's classical era, to travel accounts of European visitors in the 16th and 17th century, the burgeoning culture of travel in the Edo era, and the age of mass tourism in the land of the bullet train. Readings in secondary and primary sources include poetry and fiction, travel guides, diaries, maps, images, and material objects such as souvenirs and regional foods. Students will do a research project on a project of their choice.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY512S TRAVEL JAPAN, AMES512S TRAVEL JAPAN, ARTHIST512S TRAVEL JAPAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

EAS581S - Pan-Asianism, Religion, and the State in Modern Asia

Course Description
An examination of the interaction between religious institutions and the state in modern Asia. The role of religion in the formation of pan-Asian identity in Asia also will be investigated.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES581S RELIGION IN MODERN ASIA, RELIGION581S RELIGION IN MODERN ASIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations

EAS590S - Special Topics in East Asian Studies

Course Description
Content to be determined each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EAS700 - East Asian Studies Core Course: Fields and Methods

Course Description
A graduate-level introduction to the study of East Asia. Students will survey a variety of disciplinary approaches to East Asian studies. The course will be directed by the director of graduate studies or the institute director. Units of the course will be taught by core faculty of the Asian/Pacific Studies Institute and visiting lecturers. Discipline approaches to be addressed include anthropology, art history, economics, history, literary studies, political science, religious studies, and sociology. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES700 EAST ASIAN STUDIES CORE COURSE, RELIGION700 EAST ASIAN STUDIES CORE COURSE, HISTORY707 EAST ASIAN STUDIES CORE COURSE

EAS701K - International Political Econ

Course Description
This course is an introduction to international political economy, the study of how and why international economic policies are formed, and how the international economy influences domestic politics and economic performance. Course will include a significant amount of economic theory. We will examine the development of the international political-economic order since the 18th century and simultaneously compare 'lessons from history' to present-day issues. This course corresponds with POLECON 201 at Duke Kunshan University. Graduate students enrolled in this course are required to complete additional readings and assignments as determined by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EAS702K - Field Methods

Course Description
This course explores the history and practice of ethnographic field research and engages central debates about ethnographic method. The readings prompt deeper reflection on doing field research, and challenges students to think about anthropological ways of knowing. Students will be required to carry out field research, define and design a project, recording (through field notes or other methods) every step of the way. This course corresponds with CULANTH 302 at Duke Kunshan University. Graduate Students enrolled in this course will be assigned additional work and held to graduate-level standards in terms of assessment.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EAS703K - Policy Choice as Value Conflict

Course Description
People disagree about public policy not only because they disagree about empirical matters but also because they hold different understandings of familiar political concepts and they assign different weightings to competing political values. This course aims both to illustrate these general propositions and, more importantly, to introduce the tools and techniques with which one can construct and critique reasoned arguments about the political concepts and values that underpin policy choice. This course corresponds with PUBPOL 303 at Duke Kunshan University. Graduate students enrolled in this course are required to complete additional readings and assignments as determined by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EAS706K - The Ethnography of China

Course Description
The course provides a critical overview to the anthropology and ethnography of contemporary China. This course corresponds with CULANTH 206 at Duke Kunshan University. Graduate students enrolled in this course will be required to complete additional readings and assignments as determined by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EAS770 - Research Methods in Chinese Law & Policy

Course Description
This course intends to cover three modules: researching the Chinese legal system, researching legal and political authorities in China, covering important resources and tactics in law and policy-related fields at both the general and granular levels. Students interested in learning about the fundamental legal framework and the methodologies and tools available for carrying out theoretical and practical Chinese legal studies may find this course useful. Students will be assessed on the basis of class attendance, in-class exercises, homework assignments, and a final project, which will all count toward the final grade. This course is the EAS listing for LAW 770.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EAS791 - Reading Topics: Independent Study

Course Description
These courses allow for independent study on specific topics on an individual basis with instructors. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

EAS792K - Research Independent Study

Course Description
Requires students to meet with instructor once per week to discuss and integrate topics covered in other courses. A major essay is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EAS801K - From Empire to Nation: China's Modern Transition from the Perspective of Cultural History

Course Description
We have heard a lot of grand stories about how China transited from a traditional empire to a modern nation-state: the wars, the reforms, the revolutions, and all those great (men's) names. How did the common people experience these historical transitions? How did they speak, think, feel, and remember their times? What did they hear, watch, read (if they were not illiterate), and encounter in everyday life? In this course, we revisit China's modern transition from the perspective of cultural history. This is the graduate-level version of Duke Kunshan University course GCHINA 201. Graduate students are given additional requirements listed in the expanded course description. Department consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

EAS802K - Sociology of Culture

Course Description

This course will allow students to engage in and contribute to this conversation in an effort to develop their understanding of culture and related changes in social processes over time. This course exposes students to the unique approaches the sociologists take to understanding culture and introduces them to many of the major theorists of culture. By the end of the course, students will have a basic toolkit for understanding society culturally. This course corresponds with SOCIOLOGY 202 at Duke Kunshan University. Graduate students enrolled in this course are required to complete weekly additional readings as assigned by the instructor. A final research paper is required for graduate students.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

EAS890S - Special topics in East Asian Studies

Course Description

Special topics in East Asian Studies. Topics vary each semester.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

EAS902K - China in Global Perspective 2: The Internationalization of Modern China

Course Description

In this course we explore how modern Chinese culture comes into being and keeps refreshing itself in the everlasting interactions with international cultures. We will focus on three critical historical moments: the end of the 'long nineteenth century' (roughly the early Republican period in China), the global 60s, and the turn of the new century. In each period, we study how the world was brought home on the one hand, and trace how Chinese cultural elements went onto the global stage on the other. This course corresponds with HIST 302 at Duke Kunshan University. Graduate students enrolled in this course are required to complete additional readings and assignments as determined by the instructor.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

ECE511 - Foundations of Nanoscale Science and Technology

Course Description

This course is the introductory course for the Graduate Certificate Program in Nanoscience (GPNANO) and is designed to introduce students to the interdisciplinary aspects of nanoscience by integrating important components of the broad research field together. This integrated approach will cross the traditional disciplines of biology, chemistry, electrical & computer engineering, computer science, and physics. Fundamental properties of materials at the nanoscale, synthesis of nanoparticles, characterization tools, and self-assembly. Prerequisites: Physics 152L and Chemistry 101DL or instructor approval.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NANOSCI511 FOUNDATIONS NANOSCALE SCI/TECH, CHEM611 FOUNDATIONS NANOSCALE SCI/TECH

ECE512 - Emerging Nanoelectronic Devices

Course Description
Brief review of semiconductor device physics followed by coverage of the most prominent emerging nanoelectronic devices. Topics include: nanoelectronic logic devices (advanced silicon transistors, carbon nanotube transistors, spintronics, 2D FETs, NEMS, tunnel FETs, negative capacitance FETs and piezoelectronics), and nanoelectronic memory devices (phase change, spin transfer torque, nanomechanical, ferroelectric FET, and molecular memory). Students will understand basic operation, pros/cons of performance, and primary integration challenges. Students conduct case study project, culminating with class presentation. Prerequisite: ECE 230L or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE516 - Thin-Film Photovoltaic Technology

Course Description
This course will focus in on a promising class of solar cells based on thin-film absorbers, some of which are already commercialized (e.g., CdTe, CIGS), while others are on the cutting edge of new photovoltaics technology (e.g., perovskites). The course will employ a combination of lecture, directed reading and hands-on approaches. The hands-on component of the course will involve fabricating PV devices and employing contemporary characterization and modeling tools to evaluate device performance. Specific techniques and the intellectual framework are more generally applicable to other PV and electronic devices. Recommended prerequisite: ECE 230 or related familiarity with electronic properties of materials. Open to graduate students; instructor consent required for undergraduate students to enroll.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME516 THIN-FILM PV TECHNOLOGY

ECE520 - Graduate Introduction to Quantum Engineering

Course Description
Quantum mechanics was discovered at the beginning of the 20th century and has had a profound effect on the development of modern technology. This course is about the potential for quantum technologies in the 21st century. The focus of the course this semester will be a survey of quantum computation, a field that promises to revolutionize the way we compute by using the dynamics of quantum mechanics. Topics include quantum circuits, introduction to quantum algorithms, hardware, and architectures. Prerequisite: [ECE 270DL and ECE 280L and one of (Math 216, 218D-1, 218D-2, or 221)] or graduate standing. Not open to students who have taken ECE 420.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE521 - Quantum Mechanics

Course Description
Discussion of wave mechanics including elementary applications, free particle dynamics, Schrödinger equation including treatment of systems with exact solutions, and approximate methods for time-dependent quantum mechanical systems with emphasis on quantum phenomena underlying solid-state electronics and physics. Prerequisite: Mathematics 216 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE522 - Quantum Engineering with Atoms

Course Description
This course will cover basic sciences of atoms and their interaction with the electromagnetic field, basic atomic processes, and ways to engineer various sensors and quantum information processing systems utilizing basic atomic processes. Topics will include: Energy levels of hydrogen atom, fine-structure and hyperfine structure, atomic radiation, atomic coherence, atomic interaction with electromagnetic radiation, atomic sensors, atomic qubits, laser technology, optical control of atomic states.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE523 - Quantum Computing

Course Description
Fundamental concepts and progress in quantum information science. Quantum circuits, quantum universality theorem, quantum algorithms, quantum operations and quantum error correction codes, fault-tolerant architectures, security in quantum communications, quantum key distribution, physical systems for realizing quantum logic, quantum repeaters and long-distance quantum communication. Prerequisites: Electrical and Computer Engineering 521 or Physics 464 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS627 QUANTUM COMPUTING

General Education Curriculum Codes
(NS) Natural Sciences, (QS) Quantitative Studies

ECE524 - Introduction to Solid-State Physics

Course Description
Discussion of solid-state phenomena including crystalline structures, X-ray and particle diffraction in crystals, lattice dynamics, free electron theory of metals, energy bands, and superconductivity, with emphasis on understanding electrical and optical properties of solids. Prerequisite: quantum physics at the level of Physics 264L or Electrical and Computer Engineering 521.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECE526 - Semiconductor Devices for Integrated Circuits

Course Description
Semiconductor devices - pn junctions (including solar cells, light emitting diodes, photodetectors), metal-semiconductor junctions (as contacts and as Schottky diodes), MOS capacitors, MOSFETs (including short channel transistors), Bipolar Junction Transistors, heterojunctions. Prerequisite: Electrical and Computer Engineering 230L or a graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE528 - Nanoscale IC Chip Technology

Course Description
Key processing technologies for integrated circuits with an emphasis on the fundamentals of process scaling to fabricate nanoscale IC chips. Photolithographic scaling methods, modern photoresists, anti-reflection coatings, and optical and EUV exposure systems. Scaled pn junction formation with ion implantation and rapid thermal annealing, ultrathin gate dielectrics, silicon gate and metal gate technologies. Fundamentals of deposited metal and dielectric films driven by requirements for chip interconnections and wafer planarity. Prerequisite: ECE 230L and Chem 101DL, or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE529 - Digital Integrated Circuits

Course Description
Analysis and design of digital integrated circuits in deep submicron MOS technology. Brief review of IC technology, MOSFETs, and interconnects. Switching characteristics (propagation delay) and power consumption in NMOS/CMOS devices and interconnects. Analysis of static and dynamic logic circuits (inverters, gates) and memory circuits (SRAMs, DRAMs, Flash). Influence of technology and device structure on performance and reliability of digital ICs. SPICE modeling. Memory array design project. Prerequisite: Electrical and Computer Engineering 331L or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE531 - Power Electronic Circuits for Energy Conversion

Course Description

Efficient conversion of electrical energy is critical for electric and hybrid vehicles, wind and solar energy, power grids, computers, medical devices, and portables. This course teaches analysis and design of power electronic circuits for energy conversion, including circuit operation (converter topologies, steady-state modeling, switch realization), converter control (ac modeling, small-signal transfer functions, feedback), and magnetics (inductors, transformers). The course shares lectures with ECE/Energy Engineering 431, but has extended assignments. Prerequisite: ECE 230L or Engineering 224L or graduate student standing. Not open to students who have taken ECE 431 or Energy Engineering 431.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENRGYEGR531 PWR CKTS FOR ENERGY CONVERSION

ECE532 - Analog Integrated Circuit Design

Course Description

Design and layout of CMOS analog integrated circuits. Qualitative review of the theory of pn junctions, bipolar and MOS devices, large and small signal models. Emphasis on MOS technology. Continuous time op amps. Frequency response, stability, and compensation. Complex analog subsystems including phase-locked loops, A/D and D/A converters, switched capacitor simulation, layout, extraction, verification, MATLAB modeling. Projects make extensive use of full custom VLSI CAD software. Prerequisite: [(ECE 330L or 331L) & ECE 230L, 250D, 270DL & 280L and (Math 353 or 356) and (Math 230, 231, 340 or ECE 555 or STA 240L or EGR 238L) & Physics 152L & Chemistry 101DL] or a graduate student standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE533 - Biochip Engineering

Course Description

A problem-solving course in which students consider technology options for a complete lab-on-a-chip design. Lectures cover the basics of analog flow microfluidic devices, digital microfluidic devices, fabrication technologies for discrete devices, system integration issues, and a significant emphasis on biological applications for analysis, sample preparation, and detection issues. Technologies covered will include microfluidic devices, electrophoresis, analytical methods used in genetics, sample preparation methods, and analyte detection. Prerequisites: Biology 201L, Chem 101DL, and Physics 152L (or equivalents).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE534 - Graduate Rainforest Engineering

Course Description
An open-format project-based class for graduate student team design with a focus on rainforests and related environments. Engages graduate students in cross-disciplinary team challenges that will teach them to work together with other students of differing backgrounds and skills. Design challenges are similar to the XPRIZE contests, or the NAE Grand Challenges. Graduate students taking this class will collaborate with undergraduates taking a similar class and are expected to provide mentorship and leadership for their undergraduate collaborators. Prerequisite: Graduate student standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON554 GRAD RAINFOREST ENGINEERING

ECE538 - VLSI System Testing

Course Description
Fault modeling, fault simulation, test generation algorithms, testability measures, design for testability, scan design, built-in self-test, system-on-a-chip testing, memory testing. Prerequisite: Electrical and Computer Engineering 350L or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE539 - CMOS VLSI Design Methodologies

Course Description
Emphasis on full-custom digital ASIC design using CMOS technology. Extensive use of CAD tools for IC design, simulation, and layout verification. Includes techniques for designing high-speed, low-power, easily-testable circuits. Semester design project: Student groups design and simulate simple custom IC using Mentor Graphics CAD tools. Formal project proposal, written project report, and formal project presentation required. Prerequisite: [ECE 350L, 331L, 230L, 250D, 270DL, and 280L and (MATH 353 or 356) and (Statistical Science 240L or MATH 230 or MATH 231 or Mathematics 340 or ECE 555 or EGR 238L) and Physics 152L and Chemistry 101DL] or graduate-student standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE541 - Advanced Optics

Course Description
This course presents a rigorous treatment of topics in Photonics and Optics targeted at students with an existing photonics or optics background. Topics will include, Optical Sources, Statistical Optics and Coherence Theory, Detection of Radiation; Nonlinear Optics; Waveguides and Optical Fibers; Modern Optical Modulators; Ultrafast lasers and Applications. These topics will be considered individually and then from a system level perspective. Prerequisite: Electrical and Computer Engineering 340L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME552 ADVANCED OPTICS, PHYSICS621 ADVANCED OPTICS

ECE542 - Holography and Coherent Imaging

Course Description
Coherent imaging techniques generate images based on measurements of the amplitude/phase of the electromagnetic field rather than the time averaged energy flow (irradiance). In some frequency ranges, there exist technologies that allow for direct measurement of amplitude and phase, however, at higher frequencies only irradiance sensitive detectors exist. Here, coherent imaging requires the use of techniques like holography and interferometry that encode information about the amplitude/phase into the irradiance. This course examines coherent imaging in both these regimes and develops an understanding of the associated performance limits. Prerequisite: ECE 270DL or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE543 - Statistical Optics

Course Description
Theoretical treatment of the statistical nature of optical fields via concepts such as second-order spatial and temporal coherence. Especially focuses on the theory of partial coherence and its applications including imaging with partially coherent light, laser speckle, and propagation through turbid/random media. Prerequisite: ECE 270DL or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE544 - Nonlinear Optics

Course Description
This course is focused on fundamentals and applications of nonlinear light-matter interactions. The following topics will be considered: physical mechanisms of optical nonlinearity, nonlinear optical susceptibilities, intensity dependent refractive index, nonlinear wave mixing processes, optical self-action effects including self-focusing and optical solitons, optical phase conjugation, stimulated Brillouin and stimulated Raman scattering, supercontinuum generation, light filamentation, and nonlinear optical materials.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS544 NONLINEAR OPTICS

ECE545 - Foundations of Nanoelectronics & Nanophotonics

Course Description
Theory and applications of nanoelectronics and nanophotonics. Quantum dots and wells, metal nanoparticles, organic-inorganic interfaces, graphene, next generation transistors, light emitters, and sensors. Prerequisite: Electrical and Computer Engineering 230L and 270DL or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE546 - Optoelectronic Devices

Course Description
Devices for conversion of electrons to photons and photons to electrons. Optical processes in semiconductors: absorption, spontaneous emission and stimulated emission. Light-emitting diodes (LEDs), semiconductor lasers, quantum-well emitters, photodetectors, modulators and optical fiber networks. Prerequisite: Electrical and Computer Engineering 526 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE549 - Optics and Photonics Seminar Series

Course Description
Weekly seminar on the current research topics in the field of optics and photonics.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BME609 OPTICS & PHOTONICS SEMINAR SER, PHYSICS549 OPTICS & PHOTONICS SEMINAR SER

ECE550D - Fundamentals of Computer Systems and Engineering

Course Description
Fundamentals of computer systems and engineering for master's students whose undergraduate background did not cover this material. Topics covered include: Digital logic, assembly programming, computer architecture, memory hierarchies and technologies, IO, hardware implementation in VHDL, operating systems, and networking. Undergraduates may not take this course and should take ECE 250D, 353, and/or 356 instead. Co-requisite: ECE 551D. Not open to students who have taken or are taking ECE 552.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE551D - Programming, Data Structures, and Algorithms in C++

Course Description
Students learn to program in C and C++ with coverage of data structures (linked lists, binary trees, hash tables, graphs), Abstract Data Types (Stacks, Queues, Maps, Sets), and algorithms (sorting, graph search, minimal spanning tree). Efficiency of these structures and algorithms is compared via Big-O analysis. Brief coverage of concurrent (multi-threaded) programming. Emphasis is placed on defensive coding, and use of standard UNIX development tools in preparation for students' entry into real world software development jobs. Not open to undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE552 - Advanced Computer Architecture I

Course Description
Fundamental aspects of advanced computer architecture design and analysis. Topics include processor design, pipelining, superscalar, out-of-order execution, caches (memory hierarchies), virtual memory, storage systems, simulation techniques, technology trends and future challenges. Prerequisite: Computer Science 250 or Electrical and Computer Engineering 350 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI550 ADV COMPUTER ARCHITEC I

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE553 - Compiler Construction

Course Description
Covers the fundamentals of compiler design. Students will develop a working compiler, writing all stages required to take source code as input and produce working assembly as output: lexical analysis, parsing, type checking, translation to intermediate representation, instruction selection, liveness analysis, and register allocation. Students are expected to have a strong programming background prior to taking this course, as writing a compiler is a significant programming task. Prerequisites: Electrical and Computer Engineering 250L or Computer Science 250 or (ECE 550D and ECE 551D).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI553 COMPILER CONSTRUCTION

ECE554 - Fault-Tolerant and Testable Computer Systems

Course Description
Technological reasons for faults, fault models, information redundancy, spatial redundancy, backward and forward error recovery, fault-tolerant hardware and software, modeling and analysis, testing, and design for test. Prerequisite: Electrical and Computer Engineering 250D or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI554 FAULT-TOLERANT/COMP SYS

ECE555 - Probability for Electrical and Computer Engineers

Course Description
Basic concepts and techniques used stochastic modeling of systems with applications to performance and reliability of computer and communications system. Elements of probability, random variables (discrete and continuous), expectation, conditional distributions, stochastic processes, discrete and continuous time Markov chains, introduction to queuing systems and networks. Prerequisite: Mathematics 216.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI555 PROBABILITY ELEC AND COMP EGRS

ECE556 - Wireless Networking and Mobile Computing

Course Description
Theory, design, and implementation of mobile wireless networking systems. Fundamentals of wireless networking and key research challenges. Students review pertinent journal papers. Significant, semester-long research project. Networking protocols (Physical and MAC, multi-hop routing, wireless TCP, applications), mobility management, security, and sensor networking. Prerequisites: Electrical and Computer Engineering 356 or Computer Science 310.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI515 WIRELESS NETWORKING

ECE557 - Computer Architecture and Hardware Acceleration

Course Description
This course is a graduate-level seminar in computer architecture with special topics in hardware acceleration. This course surveys the landscape of hardware acceleration from historical contexts to recent trends in system designs spanning a collection of architectural techniques (e.g., stream processing, dataflow architecture, parallelism applied to acceleration) and a variety of application domains (e.g. GPU, ML, Database, Graph, Genomics). This course also covers the taxonomy of accelerators, the hardware-software co-design of accelerators, and the deployment of accelerators using the AWS cloud. Prerequisite: Computer Architecture (COMPSCI 250D/ECE 250 or COMPSCI 550/ECE 552) and Digital Logic Design (COMPSCI 350/ECE 350 or ECE 550) or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI557 COMP ARCH & HW ACC

General Education Curriculum Codes
R - (R) Research, QS - (QS) Quantitative Studies

ECE558 - Advanced Computer Networks

Course Description
Entry-level graduate course. Basic systems support for process-to-process communications across a computer network. The TCP/IP protocol suite and the Berkeley sockets application programs interface. The topics include congestion control, packet scheduling, routing, software defined networking, datacenter networks, network function virtualization, programmable switches, network measurement, remote direct memory access, residential networks, peer-to-peer networks, and content distribution networks. Recommended prerequisite: entry-level computer systems course (Computer Science 310, 356, 510); knowledge of the C or Python.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI514 ADVANCED COMPUTER NETWORKS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE559 - Advanced Digital System Design

Course Description
Fundamentals of an advanced digital system design, and the use of a hardware description language, VHDL, for their synthesis and simulation. System examples include the arithmetic/logic unit, memory, and microcontrollers. The team-based project incorporates engineering standards and realistic constraints and also considers Cost, environmental impact, manufacturability, health, and safety, ethics, social and political impact. Prerequisite: [ECE 350L, 230L, 250D, 270DL, and 280L and (MATH 353 or 356) and (STA 240L or MATH 230 or MATH 231 or MATH 340 or ECE 380 or ECE 555 or EGR 238L) & PHYS 152L & CHEM 101DL and ECE 331L (prerequisite or corequisite)] or a graduate student standing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE560 - Computer and Information Security

Course Description
An intense trip through many facets of computer and information security. Includes discussion and practical exercises in risk management, threat modeling, applied cryptography, malicious software, network security, intrusion detection and prevention, software and OS security, auditing and forensics, reverse engineering, and social engineering. Includes many hands-on security assignments. Prerequisite: Computer Science 310, ECE 353, or ECE 650.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE561 - Datacenter Architecture

Course Description
Ethical inquiry into journalism and its effect on public discourse. Issues include accuracy, transparency, conflicts of interest and fairness. Topics include coverage of national security, government secrecy, plagiarism/fabrication, and trade-offs of anonymous sourcing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECE563 - Cloud Computing

Course Description
In a seminar format, explore a number of the underlying technologies, business models, and innovations underpinning current widespread deployment of 'cloud' computing systems, services, and applications. Each student will be expected to choose a relevant subject, identify appropriate advance readings for the class, and lead one discussion on topics of interest to the group. There will be a project component to the course; some projects may be in the form of literature reviews and papers, others will involve practical experience creating and deploying a useful service or application in a cloud environment.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE564 - Mobile Application Development

Course Description
Explores mobile application development in the Apple Development Environment. Uses core software engineering pillars of Swift, Xcode, iOS & Xcode Cloud to learn how to create apps for Apple products. Focuses on iOS/iPhone, but Xcode also allows for exploration into the VisionPro, the Apple Watch, the iPad, and Apple TV. Real world context focused on common programming patterns for engineers in academia or business - standalone apps, apps connected to other systems, apps connected to the cloud. Covers software engineering fundamentals essential to understanding all aspects of app development. Each team will deliver a fully functioning app. Recommended prerequisite: CompSci 307D or CompSci 308 or ECE 651.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECE565 - Performance Optimization & Parallelism

Course Description
Analyzing and optimizing the performance of software, in both a single- and multi-threaded setting. Apply knowledge of hardware, programming, and assembly to both tasks. Single-threaded performance topics include code profiling & analysis, loop transformation, analysis of interaction of code & memory hierarchy, assembly level instruction scheduling impacts. Multi-threaded topics include scalability & load balance. For students with strong foundation of programming skills in high-level languages, assembly language, and computer architecture & design. Prerequisite: [(ECE/CompSci 250D and [CompSci 310 or ECE 353]) or (ECE 550D and (ECE 551D or ECE 751D))] and ECE 552 (may be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE566 - Enterprise Storage Architecture

Course Description
Study the design and deployment of massive storage systems of the sort used in large enterprises (banks, major IT departments, service providers, etc.). Includes coverage of hard disk and flash design, RAID, SAN and NAS topologies, filesystem design, data center architectures for high availability, data deduplication, business continuity, and the economics of data storage with respect to cloud computing. Includes a few homeworks and a semester-long programming project. Prerequisite: graduate students: ECE 650; undergraduate students: Computer Science 310 or ECE 353.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE567 - Cyber-Physical System Design

Course Description
Complex interactions between information technology and physical world in Cyber-Physical Systems (CPS) challenge standard design methods that ignore cross-cutting constraints. This course addresses CPS design challenges by exploiting theory and methods from embedded systems, controls, and formal methods. Course covers topics related to the integration of system modeling, analysis, and automatic synthesis into design frameworks that ensure closed-loop safety and performance under known and unknown operating conditions. Balances establishing a working knowledge of CPS design and analysis methods with understanding the theory behind them. Prerequisite: ECE 350L and Computer Science 310/ECE 353, or graduate-student standing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECE568 - Engineering Robust Server Software

Course Description
In this course, students learn about important principles in server software design and development. These principles include topics such as handling asynchronous behavior, design for failure, basic security principles, scalability, and resilience. Students will put these ideas into practices by developing software reflecting the ideas learned in class. Prerequisite: (ECE 551D or ECE 751D) and corequisite ECE 650, or [(Computer Science 307D or Computer Science 308) and (ECE 353 or CompSci 310) and (ECE 356 or CompSci 356)].

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE571 - Electromagnetic Theory

Course Description
The classical theory of Maxwell's equations; electrostatics, magnetostatics, boundary value problems including numerical solutions, currents and their interactions, and force and energy relations. Three class sessions. Prerequisite: Electrical and Computer Engineering 270DL.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE572 - Electromagnetic Communication Systems

Course Description
Review of fundamental laws of Maxwell, Gauss, Ampere, and Faraday. Elements of waveguide propagation and antenna radiation. Analysis of antenna arrays by images. Determination of gain, loss, and noise temperature parameters for terrestrial and satellite electromagnetic communication systems. Prerequisite: Electrical and Computer Engineering 270DL or 571.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE573 - Optical Communication Systems

Course Description
Mathematical methods, physical ideas, and device concepts of optoelectronics. Maxwell's equations, and definitions of energy density and power flow. Transmission and reflection of plane waves at interfaces. Optical resonators, waveguides, fibers, and detectors are also presented. Prerequisite: Electrical and Computer Engineering 270DL or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE574 - Waves in Matter

Course Description
Analysis of wave phenomena that occur in materials based on fundamental formulations for electromagnetic and elastic waves. Examples from these and other classes of waves are used to demonstrate general wave phenomena such as dispersion, anisotropy, and causality; phase, group, and energy propagation velocities and directions; propagation and excitation of surface waves; propagation in inhomogeneous media; and nonlinearity and instability. Applications that exploit these wave phenomena in general sensing applications are explored. Prerequisite: Electrical and Computer Engineering 270DL.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE575 - Microwave Electronic Circuits

Course Description
Microwave circuit analysis and design techniques. Properties of planar transmission lines for integrated circuits. Matrix and computer-aided methods for analysis and design of circuit components. Analysis and design of input, output, and interstage networks for microwave transistor amplifiers and oscillators. Topics on stability, noise, and signal distortion. Prerequisite: Electrical and Computer Engineering 270DL or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE577 - Computational Electromagnetics

Course Description
Systematic discussion of useful numerical methods in computational electromagnetics including integral equation techniques and differential equation techniques, both in the frequency and time domains. Hands-on experience with numerical techniques, including the method of moments, finite element and finite-difference time-domain methods, and modern high order and spectral domain methods. Prerequisite: Electrical and Computer Engineering 571 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE580 - Introduction to Machine Learning

Course Description
Introduction to core concepts in machine learning and statistical pattern recognition, with a focus on discriminative and generative classifiers (nearest-neighbors, Bayes, logistic regression, linear discriminant, support vector machine, and relevance vector machine). Dimensionality reduction and feature selection. Classifier performance evaluation, bias-variance tradeoff, and cross-validation. Prerequisite: (Mathematics 216, 218D-1, 218D-2, or 221, or ECE 586) and (Computer Science 201 or ECE 551D) and (ECE 480 or ECE 581 or MATH 541 or MATH 730 or MATH 740). Not open to students who have taken Computer Science 671D.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE581 - Random Signals and Noise

Course Description
Introduction to mathematical methods of describing and analyzing random signals and noise. Review of basic probability theory; joint, conditional, and marginal distributions; random processes. Time and ensemble averages, correlation, and power spectra. Optimum linear smoothing and predicting filters. Introduction to optimum signal detection, parameter estimation, and statistical signal processing. Prerequisite: one of (STA 130L or STA 240L or Mathematics 230 or or Mathematics 340 or ECE 380 or ECE 555 or EGR 238L) or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE582 - Digital Signal Processing

Course Description
Introduction to fundamental algorithms used to process digital signals. Basic discrete time system theory, the discrete Fourier transform, the FFT algorithm, linear filtering using the FFT, linear production and the Wierner filter, adaptive filters and applications, the LMS algorithm and its convergence, recursive least-squares filters, nonparametric and parametric power spectrum estimation minimum variance and eigenanalysis algorithms for spectrum estimation. Prerequisite: Electrical and Computer Engineering 581 or equivalent with consent of the instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE583 - Data Science

Course Description
Data science is 'the science of planning for, acquisition, management, analysis of, and inference from data'. This course systematically covers the concepts, ideas, tools, and example applications of data science in an end-to-end manner. We emphasize data-driven thinking, data processing and analytics, and extracting actionable values from data. We focus on the interactions between data and applications, data modeling, and data processing, data analytics, and the essential algorithms and tools. Prerequisites: A statistics course (Statistics 111 or higher), data structures and algorithms (Computer Science 201), and relational databases (Computer Science216 or 316).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI526 DATA SCIENCE, CBB526 DATA SCIENCE

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE585 - Signal Detection and Extraction Theory

Course Description
Introduction to signal detection and information extraction theory from a statistical decision theory viewpoint. Subject areas covered within the context of a digital environment are decision theory, detection and estimation of known and random signals in noise, estimation of parameters and adaptive recursive digital filtering, and decision processes with finite memory. Applications to problems in communication theory. Prerequisite: Electrical and Computer Engineering 581 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE586D - Vector Space Methods with Applications

Course Description
Key concepts from advanced linear algebra that are used regularly in ECE/CS journal papers on signal processing, communications, circuit design, and machine learning (e.g., logic, topology, vector spaces, optimization). Key mathematical ideas/proofs will be presented and applied. Uses application topics such as Markov chains, alternating projections, pattern classification to illustrate important mathematical topics. Background in linear algebra, a high-level programming language, and probability is assumed. Prerequisites: [(Math 216, 221, or 218-2) & (EGR 103L or CS 201) & (STA 130 or STA 240L or Math 230 or Math 340 or ECE 380 or ECE 555 or EGR 238L) & ECE 280L] or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE587 - Information Theory

Course Description
Information theory is the science of processing, transmitting, storing, and using information. This course provides an introduction to mathematical measures of information and their connection to practical problems in communication, compression, and inference. Entropy, mutual information, lossless data compression, channel capacity, Gaussian channels, rate distortion theory, Fisher information. Useful for researchers in a variety of fields, including signal processing, machine learning, statistics, and neuroscience. Appropriate for beginning graduate students in electrical engineering, computer science, statistics, and math with a background in probability.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA563 INFORMATION THEORY

ECE588 - Image and Video Processing: From Mars to Hollywood with a Stop at the Hospital

Course Description
Intro to image formation, image compression, image enhancement & image segmentation. Covers geometric and non-geometric tools, as well as spatial and non-spatial operations. Extension to color images and video. Addresses recent progress in the area, including image inpainting (how to remove objects from images and video), image processing via sparse modeling & compressed sensing, geometric partial differential equations for image analysis, image processing for HIV & virus research, image processing for neurosurgery & other medical applications. Prerequisite: [ECE 280L and (Mathematics 216, 218D-1, 218D-2, or 221) and (STA 130L or STA 240L or Mathematics 230 or Mathematics 340 or ECE 380 or ECE 555 or EGR 238L)] or graduate student standing.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE590 - Advanced Topics in Electrical and Computer Engineering

Course Description
Opportunity for study of advanced subjects related to programs within the electrical and computer engineering department tailored to fit the requirements of a small group. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECE590A - Advanced Topics in Electrical and Computer Engineering

Course Description
Opportunity for study of advanced subjects related to programs within the electrical and computer engineering department tailored to fit the requirements of a small group. Instructor consent required. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECE590D - Advanced Topics in Electrical and Computer Engineering

Course Description
Opportunity for study of advanced subjects related to programs within the electrical and computer engineering department tailored to fit the requirements of a small group. Has discussion.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECE621 - Quantum Error Correction

Course Description
In this course, we cover two related topics: quantum error correction and quantum computer architectures. In the beginning of the course, we will cover the basics of quantum error correction and develop the tools needed to understand modern methods of fault-tolerant quantum computation. In the end of the course, we will discuss how quantum error correction influences the design of a large-scale quantum computer. Prerequisite: ECE 523/PHYSICS 627 or ECE 420 or ECE 520.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS628 QUANTUM ERROR CORRECTION

ECE623 - Quantum Information Theory

Course Description
Introduction to fundamental ideas of Quantum Information theory, such as entanglement, quantum entropy, mutual information, and data compression. A primary goal of this field is to understand how quantum effects, such as entanglement, can enhance communication protocols. These concepts are also essential for quantifying noise and decoherence in quantum computers. Furthermore, they have various applications in other areas, including quantum thermodynamics and many-body physics. Prerequisite: [ECE 420 or ECE 520 or ECE 521 or PHYSICS 464] and [ECE 586 or MATH 216 or MATH 218D-1 or MATH 218D-2 or MATH 221].

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS623 QUANTUM INFORMATION THEORY

ECE624 - Open Quantum Systems

Course Description
Experimental quantum systems are inevitably coupled to their environment. This leads to dissipation and decoherence, which pose challenges for quantum technology but can also be used to drive novel effects. Open quantum systems are described using density operators, quantum channels, and second quantization. We will derive the Lindblad master equation which can explain dissipation, decoherence, and thermalization. Experimental platforms for quantum computation and simulation will be discussed from this viewpoint. Advanced concepts covered may include nonequilibrium phase transitions, quantum trajectories, tensor networks, and the Keldysh formalism. Recommended prerequisite: PHYSICS 464 or ECE 521

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS624 OPEN QUANTUM SYSTEMS

General Education Curriculum Codes
NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

ECE631 - Analog and RF Integrated Circuit Design, Fabrication, and Test

Course Description
For students who have some experience in analog circuit design and want to fabricate and test an IC under faculty supervision. Typically taken over three semesters (Fall, Spring, Summer, or Fall, Spring, Fall) to accommodate design-fabricate-test cycle. Design cycle: students use Cadence or Mentor IC layout tools, and HSPICE or ADS simulation tools. Fabrication cycle: a detailed test plan is developed. Test cycle: students access test facility appropriate for design and submit a report to the IC fabrication foundry. Co-requisite: ECE 539, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
2

ECE650 - Systems Programming and Engineering

Course Description
Focuses on a range of topics that are central to both the design of operating systems and the programming system-level software. Students will apply knowledge of basic concepts in operating systems, networking, and programming towards these two areas. Topics covered will include concurrency, process management, hypervisors, networking, security, databases, and file systems. Students will be expected to demonstrate their understanding in these areas through a series of programming assignments covering these topics. Prerequisite: ECE 550D and (ECE 551D or ECE 751D).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE651 - Software Engineering

Course Description
Teaches students about all steps of the software development lifecycle: requirements definition, design, development, testing, and maintenance. The course assumes students are skilled object-oriented programmers from prior courses, but will include a rapid introduction to Java. Students complete team-based semester-long software project which will progress through all phases of the software lifecycle. Prerequisite: Electrical and Computer Engineering 551D or 751D.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE652 - Advanced Computer Architecture II

Course Description
Parallel computer architecture design and evaluation. Design topics include parallel programming, message passing, shared memory, cache coherence, cache coherence, memory consistency models, symmetric multiprocessors, distributed shared memory, interconnection networks, and synchronization. Evaluation topics include modeling, simulation, and benchmarking. Prerequisite: Computer Science 550 or Electrical and Computer Engineering 552 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI650 ADV COMPUTER ARCHITEC II

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE653 - Human-Centered Computing

Course Description
This course addresses the importance of the human-computer interface in the design and development of things that people use. Many of the perceptual, cognitive, and social characteristics of people, as well as methods for learning more about the people, are covered. The capabilities and limits of computers and other related systems are discussed as they relate to the impact on design and implementation decisions. The course consists of a semester-long project that steps through the various stages of design. This semester's project will be reimaging on campus mental health management. Prerequisite: Computer Science 307D or 308 or Electrical and Computer Engineering 651.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI653 HUMAN-CENTERED COMPUTING

ECE654 - Edge Computing

Course Description
A seminar-format examination of design principles and recent advances in edge computing, a distributed networked system architecture that places computing and storage at multiple locations between the user and the cloud. The class covers edge computing platforms, edge-adapted algorithms, and the use of edge in mobile and Internet of Things systems and applications. The class focuses on in-depth examinations of key scientific advances in the field. Students complete and present a research-based project, individual or team-based. Prerequisite: ECE/COMPSCI 356 or ECE/COMPSCI 350L or ECE 353/COMPSCI 310 or Graduate Standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI564 EDGE COMPUTING

ECE655L - Full-Stack IoT Systems

Course Description
This course focuses on the principles and applications of full-stack Internet-of-Things (IoT). It covers the hardware and software components of building cyber-physical systems (CPS) for IoT applications, including embedded platforms with various sensors and actuators, wireless and wired networks, cloud service, and platforms, data visualization and analytics, and end-to-end IoT applications. This course includes lab sessions and group projects, where students create and build working CPS/IoT systems. Prerequisite: Computer Science 210D, Computer Science 250D, Electrical & Computer Engineering 250D, or Electrical & Computer Engineering 550D.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI655L FULL-STACK IOT SYSTEMS

ECE656 - Cryptography

Course Description
Introduction to the design and analysis of cryptographic algorithms. Topics include basics of abstract algebra and number theory; symmetric and asymmetric encryption algorithms; cryptographic hash functions; message authentication codes; digital signature schemes; elliptic curve algorithms; side-channel attacks; and selected advanced topics. Prerequisite: COMPSCI 230 or equivalent or graduate standing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI582 CRYPTOGRAPHY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE657 - Human-Centered Security and Privacy

Course Description
This course will introduce several security and privacy topics that have strong human factors component. Some of the themes that we cover throughout this course include overview of User Research Methods and Ethics, Equity and Inclusivity in Security and Privacy, Challenges In Designing Usable Security and Privacy Tools, Security and Privacy Education and Awareness, and Human-Centered Security and Privacy in Emerging Technologies. This course includes weekly reading commentaries, a midterm exam, and a final group research project. Recommended prerequisite: user research methods and CompSci 201 or equivalent programming experience.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI586 USABLE SECURITY AND PRIVACY, PUBPOL586 USABLE SECURITY AND PRIVACY, ISS586 USABLE SECURITY AND PRIVACY

ECE661 - Computer Engineering Machine Learning and Deep Neural Nets

Course Description
This course examines various computer engineering methods commonly performed in developing machine learning and deep neural network models. The focus of the course is on how to improve the training and inference performance in terms of model accuracy, size, runtime, etc. Techniques that are widely investigated and adopted in industrial companies and academic communities will be discussed and practiced. Programming practices on these techniques are designed with heavy utilization of the PyTorch package. Prerequisites: Computer Science 201 or ECE 551D or ECE 751D.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECE662 - Machine Learning Acceleration and Neuromorphic Computing

Course Description
The rapidly growing size of neural networks adopted in modern artificial intelligence (AI) applications makes accelerating computations of machine learning algorithms a critical need of the industry. This course will introduce various approaches to design high-efficient neural network models and to include hardware constraints in the efficient neural network designs. We will also discuss the hardware techniques that can accelerate the computations of neural networks on different computing platforms such as GPU, FPGA, and ASIC. Bio-inspired computing and neuromorphic computing will be also discussed. The course is a mix of lectures, labs, & projects. Prerequisite: ECE 250D/COMPSCI 250D, or ECE 552/COMPSCI 550, or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE663 - Machine Learning in Adversarial Settings

Course Description
Machine learning is being widely deployed in many aspects of our society. Our vision is that machine learning systems will become a new attack surface and attackers will exploit the vulnerabilities in machine learning algorithms and systems to subvert their security and privacy. In this course, we will discuss security and privacy attacks to machine learning systems and state-of-the-art defenses against them. Prerequisite: ECE 580 or 687D or Computer Science 371 or graduate standing

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE675 - Optical Imaging and Spectroscopy

Course Description
Wave and coherence models for propagation and optical system analysis. Fourier optics and sampling theory. Focal plane arrays. Generalized and compressive sampling. Impulse response, modulation transfer function and instrument function analysis of imaging and spectroscopy. Code design for optical measurement. Dispersive and interferometric spectroscopy and spectral imaging. Performance metrics in optical imaging systems. Prerequisite: Electrical and Computer Engineering 270DL and 280L.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECE681 - Pattern Classification and Recognition Technology

Course Description
Theory and practice of recognition technology: pattern classification, pattern recognition, automatic computer decision-making algorithms. Applications covered include medical diseases, severe weather, industrial parts, biometrics, bioinformation, animal behavior patterns, image processing, and human visual systems. Perception as an integral component of intelligent systems. This course prepares students for advanced study of data fusion, data mining, knowledge base construction, problem-solving methodologies of 'intelligent agents' and the design of intelligent control systems. Prerequisites: Mathematics 216, Statistical Science 130 or Mathematics 230, Computer Science 101, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE682D - Probabilistic Machine Learning

Course Description
Introduction to concepts in probabilistic machine learning with a focus on discriminative and hierarchical generative models. Topics include directed and undirected graphical models, kernel methods, exact and approximate parameter estimation methods, and structure learning. Prerequisite: Linear algebra, Statistical Science 250 or Statistical Science 611.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA561D PROBABILISTIC MACHINE LEARNING, COMPSCI571D PROBABILISTIC MACHINE LEARNING

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE683 - Digital Communication Systems

Course Description
Digital modulation techniques. Coding theory. Transmission over bandwidth constrained channels. Signal fading and multipath effects. Spread spectrum. Optical transmission techniques. Prerequisite: Electrical and Computer Engineering 581 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE684 - Natural Language Processing

Course Description
Introduction to algorithmic and analytic methods specific to textual data. Subject areas covered are speech recognition, optical character recognition, text parsing, and document analysis. Analysis tools taught include sentiment analysis/topic models, auto-correct, auto-complete, and translation systems. Applications to brain-computer interface communication systems, intelligent personal assistants, and plagiarism detection systems. Prerequisite: ECE 480 or ECE 580 or ECE 581 or ECE 682D or Mathematics 541 or Mathematics 730 or Mathematics 740.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE685D - Introduction to Deep Learning

Course Description
Provides an introduction to the machine learning technique called deep learning or deep neural networks. A focus will be the mathematical formulations of deep networks and an explanation of how these networks can be structured and 'learned' from big data. Discussion section covers practical applications, programming, and modern implementation practices. Example code and assignments will be given in Python with heavy utilization of PyTorch (or Tensorflow) package. The course and a project will cover various applications including image classification, text analysis, object detection, etc. Prerequisite: ECE 580, ECE 681, ECE 682D, Statistical Science 561D, or Computer Science 571D.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI675D INTRO TO DEEP LEARNING

ECE686 - Adaptive Filters

Course Description
Adaptive digital signal processing with emphasis on the theory and design of finite-impulse response adaptive filters. Stationary discrete-time stochastic processes, Wiener filter theory, the method of steepest descent, adaptive transverse filters using gradient-vector estimation, analysis of the LMS algorithm, least-squares methods, recursive least squares and least squares lattice adaptive filters. Application examples in noise canceling, channel equalization, and array processing. Prerequisites: Electrical and Computer Engineering 581 and 582 or consent of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECE687D - Theory and Algorithms for Machine Learning

Course Description
This is an introductory overview course at an advanced level. Covers standard techniques, such as the perceptron algorithm, decision trees, random forests, boosting, support vector machines and reproducing kernel Hilbert spaces, regression, K-means, Gaussian mixture models and EM, neural networks, and multi-armed bandits. Covers introductory statistical learning theory. Recommended prerequisite: linear algebra, probability, analysis or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI671D THEORY & ALG MACHINE LEARNING, STA671D THEORY & ALG MACHINE LEARNING

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECE688 - Sensor Array Signal Processing

Course Description
An in-depth treatment of the fundamental concepts, theory, and practice of sensor array processing of signals carried by propagating waves. Topics include: multidimensional frequency-domain representations of space-time signals and linear systems; apertures and sampling of space-time signals; beamforming and filtering in the space-time and frequency domains, discrete random fields; adaptive beamforming methods; high resolution spatial spectral estimation; optimal detection, estimation, and performance bounds for sensor arrays; wave propagation models used in sensor array processing; blind beamforming and source separation methods; multiple-input-multiple-output (MIMO) array processing; application examples from radar, sonar, and communications systems.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECE689 - Advanced Topics in Deep Learning

Course Description
Focus on advanced topics in deep learning, particularly methodological methods. This includes discriminative models (e.g., infinite/infinitesimal/physics-informed neural networks), generative models (normalizing flows, graphical models, Bayesian Neural Networks, non-parametric approaches), and topics on inference (e.g., exact and approximate inference methods). Assignments will provide an opportunity to implement techniques. Prerequisite: ECE 685D.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI676 ADV TOPICS IN DEEP LEARNING

ECE701S - Being a Successful ECE Masters Student

Course Description
This seminar helps first-year Masters students prepare for success in both their academics and longer-term careers. Events/topics include community building, discussions of effective learning strategies, industry panels on career options, professional networking, academic integrity, and the breadth of resources available for students to deal with difficulties.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
0

Max Units:
0

ECE721 - Nanotechnology Materials Lab

Course Description
This course provides an introduction to advanced methods for the characterization and fabrication of materials, nanostructures, and devices. Cleanroom methods to be covered include lithography, evaporation, and etching. Characterization methods include electron microscopy, atomic force microscopy, X-ray photoelectron spectroscopy, and optical spectroscopy. Students will receive an overview of the techniques in the Shared Materials Instrumentation Facility through lectures and demonstrations. In the lab section, each student will engage in a project that focuses on those capabilities that are needed for their research, and will receive training and certification on that equipment.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ME711 NANOTECHNOLOGY MATERIALS LAB

ECE722 - Quantum Electronics

Course Description
Quantum theory of light-matter interaction. Laser physics (electron oscillator model, rate equations, gain, lasing condition, oscillation dynamics, modulation) and nonlinear optics (electro-optic effect, second harmonic generation, phase matching, optical parametric oscillation and amplification, third-order nonlinearity, optical bistability.) Prerequisite Electrical and Computer Engineering 521, Physics 464, or equivalent.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECE741 - Compressed Sensing and Related Topics

Course Description
Introduction to the basic compressed sensing problems and methodologies, including the recovery of sparse vectors and low-rank matrices using methods based on convex optimization and approximate message passing. Unified theoretical framework for the analysis of certain CS problems, drawing upon ideas from statistical decision theory, high-dimensional convex geometry, information theory, convex optimization, message passing and variational inference with graphical models, and the replica method from statistical physics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA741 COMPRESSED SENSING

ECE751D - Advanced Programming, Data Structures, and Algorithms in C++

Course Description
Students learn C++, data structures (linked lists, balanced BSTs, hash tables, graphs), Abstract Data Types (Stacks, Queues, Maps, Sets), & algorithms (sorting, graph search, minimal spanning tree). Efficiency of such structures & algorithms compared via Big-O analysis. Students learn multi-threaded programming. Emphasis on defensive coding, and use of standard UNIX development tools in preparation for students' entry into real world software development jobs. Strong C programming skills required to enroll. Those without such skills should take Electrical and Computer Engineering 551D instead. Instructor consent required. Not open to students who have taken or are currently taking Electrical and Computer Engineering 551D.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECE781 - Advanced Topics in Signal Processing

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECE784LA - Sound in the Sea: Introduction to Marine Bioacoustics

Course Description
Fundamentals marine bioacoustics with focus on current literature and conservation issues. Topics include: intro acoustics; acoustic analysis methods and quantitative tools; production/recording of sound; ocean noise; propagation theory; active/passive acoustics; hearing, sound production and communication in marine organisms, potential impacts of anthropogenic noise; and regulation of marine sound. Lab focus on methodologies for generating, recording and analyzing marine sounds. Grad students responsible for additional acoustic analyses and results prep for student projects plus preparation additional lit review/critique. Taught in Beaufort at Duke Marine Lab. Prerequisite: AP or introductory biology or consent; Physics 41L or 161L (or equivalent) or consent.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BIOLOGY784LA MARINE BIOACOUSTICS, ENVIRON784LA MARINE BIOACOUSTICS

ECE891 - Internship

Course Description
Student gains practical electrical and computer engineering experience by taking a job in industry and writing a report about this experience. May be repeated with consent of the advisor and the director of graduate studies. A full-time internship is available to ECE graduate students if it allows them to gain practical experience in a work environment related to their academic training and enhances their overall academic experience and, for students on F-1 Visa, their employment prospects once they return to their home country. Requires prior consent from the student's advisor and from the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ECE899 - Special Readings in Electrical Engineering

Course Description
Special individual readings in a specified area of study in electrical engineering. Approval of director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

ECE590-1 - Advanced Topics in Electrical and Computer Engineering

Course Description
Opportunity for study of advanced subjects in electrical and computer engineering.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

ECON506 - Macroeconomic Policy and International Finance

Course Description
Survey of macroeconomic theory and analysis of policies designed to reduce unemployment, stimulate economic growth, and stabilize prices. Conventional monetary and fiscal instruments, employment policies, and new policies designed to combat inflation.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL606 MACROECONOMIC POLICY

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON511 - History of Economic Thought

Course Description
Approaches to economic problems from Aristotle to Keynes, emphasizing certain models and doctrines—their origins, relevance, and evolution. Readings from Mun, Quesnay, Adam Smith, Malthus, Ricardo, Marx, Walras, Veblen, and Keynes. Graduate version of Economics 313; graduate students will receive additional writing assignments.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON513 - Structuring Venture Capital and Private Equity Transactions

Course Description
Teams of students will act as investment-banking teams, and will complete some assignments relating to startups and growth equity. For the second half of the semester, teams will focus on a capstone project, in which they imagine that a public company has asked for help in selecting between potential acquisition targets. The final work product will be an in-depth analysis of the client company and a reasoned selection of one of the two potential targets. Each team will explain the basis for their selection in a report, and will recommend a financing structure for the transaction. Reports will be presented to the entire class. Prerequisite: Economics 372 or Economics 373.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON521 - Evaluation of Public Expenditures

Course Description
Basic development of cost benefit analysis from alternative points of view, for example, equity debt, and economy as a whole. Techniques include: construction of cash flows, alternative investment rules, inflation adjustments, optimal timing and duration of projects, private and social pricing. Adjustments for economic distortions, foreign exchange adjustments, risk and income distribution examined in the context of present value rules. Examples and cases from both developed and developing countries.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL596 EVALUATION PUBLIC EXPENDITURES, ENVIRON532 EVALUATION PUBLIC EXPENDITURES

General Education Curriculum Codes
(SS) Social Sciences

ECON521D - Evaluation of Public Expenditures

Course Description
Basic development of cost benefit analysis from alternative points of view, for example, equity debt, and economy as a whole. Techniques include: construction of cash flows, alternative investment rules, inflation adjustments, optimal timing and duration of projects, private and social pricing. Adjustments for economic distortions, foreign exchange adjustments, risk and income distribution examined in the context of present value rules. Examples and cases from both developed and developing countries.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON532D EVALUATION PUBLIC EXPENDITURES, PUBPOL596D EVALUATION PUBLIC EXPENDITURES

General Education Curriculum Codes
(SS) Social Sciences

ECON530 - Resource & Environmental Economics I

Course Description
Part 1 of a survey course in environmental and natural resource economics. Part 1 focuses on basic theory and methods of economic analysis of environmental problems including benefit-cost analysis, non-market valuation, and instrument choice. Open only to graduate students. Recommended prerequisite: Introductory course in microeconomics and one semester of calculus.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

Crosslisted Courses
ENVIRON520 RESOURCE & ENVIRON ECON I, PUBPOL576 RESOURCE & ENVIRON ECON I, ENERGY520 RESOURCE & ENVIRON ECON I

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON530D - Resource & Environmental Economics I

Course Description
Part 1 of a survey course in environmental and natural resource economics. Part 1 focuses on basic theory and methods of economic analysis of environmental problems including benefit-cost analysis, non-market valuation, and instrument choice. Prerequisite: Introductory course in microeconomics and one semester of calculus. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

Crosslisted Courses
ENVIRON520D RESOURCE & ENVIRON ECON I, PUBPOL575D RESOURCE & ENVIRON ECON I, ENERGY520D RESOURCE & ENVIRON ECON I

General Education Curriculum Codes
SS - (SS) Social Sciences

ECON531 - Resource & Environmental Economics II

Course Description
Part 2 of a survey course in environmental and natural resource economics. Part 2 focuses on basic theory and methods of economic analysis of natural resource problems including extraction of non-renewable resources over time, fisheries economics and forest economics. Prerequisite: Environment 520.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
0.5

Max Units:
1.5

Crosslisted Courses
ENVIRON521 RESOURCE & ENVIRON ECON II, PUBPOL584 RESOURCE & ENVIRON ECON II

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON531D - Resource & Environmental Economics II

Course Description
Part 2 of a survey course in environmental and natural resource economics. Part 2 focuses on basic theory and methods of economic analysis of natural resource problems including extraction of non-renewable resources over time, fisheries economics and forest economics. Prerequisite: Environment 520.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
0.5

Max Units:
1.5

Crosslisted Courses
ENVIRON521D RESOURCE & ENVIRON ECON II, PUBPOL584D RESOURCE & ENVIRON ECON II

General Education Curriculum Codes
(SS) Social Sciences

ECON532 - Modern Topics in Labor Economics

Course Description
Why do we have a welfare system? What are the implications of artificial intelligence and robotics for jobs? How can we justify the existence of minimum wage? What is the effect of immigration of the outcomes of natives? Why are female workers consistently paid less than their male counterparts? We will study how labor economists think about these topics. The course will provide some basic tools of economic analysis and important institutional background regarding the US and international economies. The class will consist of lectures and debates on the interplay between labor and public policies, including the ethical dimensions of these controversial issues.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON541 - Global Inequality Research

Course Description
Engagement of vertically integrated research teams in projects exploring racial and ethnic disparities exhibited and expressed in six arenas: employment, wealth, health, political participation, education, and arts and culture. Each team will produce a major paper that will qualify for submission to a refereed journal in the area relevant to the focus of the study.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS642 GLOBAL INEQUALITY RESEARCH, SOCIOL642 GLOBAL INEQUALITY RESEARCH, POLSCI642 GLOBAL INEQUALITY RESEARCH, PUBPOL645 GLOBAL INEQUALITY RESEARCH, RIGHTS642 GLOBAL INEQUALITY RESEARCH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SS - (SS) Social Sciences

ECON551S - Art and Markets

Course Description
Cross-disciplinary art history-visual culture-economics seminar. Analytical and applied historical exploration of cultural production and local art markets, and their emergence throughout Europe, Asia, and the Americas. Criteria for valuation of imagery or what makes art as a commodity desirable or fashionable. Visual taste formation, consumer behavior, and the role of art dealers as cross-cultural negotiants. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST508S ART AND MARKETS, VMS567S ART AND MARKETS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

ECON555S - International Trade

Course Description
International trade, investment and migration, commercial policy, and the political economy of trade. Prerequisite: Economics 205D; and Economics 210D.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON556 - Economic History and Modernization of the Islamic Middle East

Course Description
Economic development of the Middle East from the rise of Islam to the present. Transformation of the region from an economically advanced area into part of the underdeveloped world. Role of religion in economic successes and failures. Obstacles to development today. Topics: Islamic economic institutions, economic roles of Islamic law, innovation and change, political economy of modernization, interactions with other regions, economic consequences of Islamism. This is the graduate only pairing for Econ 134 which requires additional course work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI531 ECON HIST ISLAMIC MIDDLE EAST

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON558 - Islam and the State

Course Description
Introduction to political history of Middle East. Four objectives: (1) become familiar with institutions responsible for political development in region, (2) examine transformations/cases of inertia to derive lessons about mechanisms that govern political development, including democratization, (3) investigate how religion shaped the region's political trajectory, (4) identify social forces, especially economic, driving contemporary reinterpretation of Islam's political organization and requirements, by both Islamists and secular political actors. Not open to students who have taken Economics 326. Graduate students only. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI558 ISLAM AND THE STATE

ECON560 - Game Theory and Law, Economics and Organization

Course Description
Goal of the course is to enhance your ability to think strategically about complex and interactive environments. Strategic reasoning is applied to the study of Law, Economics and Organizational Behavior. Themes will be emphasized for becoming a competent strategist.1. Identifying Environments: Knowing the key features of a strategic situation that call for a response 2. Selecting Strategic Moves: Changing the game when necessary to your advantage. 3. Gathering Hidden Information: When to reveal information and when to solicit it. 4. Recognizing Rationality: How do opponents think? What are their preferences? How well informed are they?

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON564 - Competitive Strategy and Industrial Organization

Course Description
Foundations of the field of industrial organization, including the theory of the firm, models of competition, market structure, pricing and dynamic models. Emphasis on theory with support from specific industries, including telecommunications, retail and airlines. Similar to Economics 464, but requires additional assignment. Not open to students who have taken Economics 464.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(QS) Quantitative Studies, (SS) Social Sciences

ECON565 - Algorithmic Game Theory

Course Description
Study of algorithmic aspects of basic questions in microeconomics. Topics include solution concepts for games, a mechanism design, and auction theory, social choice, and resource allocation and fairness. Recommended prerequisites: Strong foundation in algorithms at the level of CompSci 330 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI535 ALGORITHMIC GAME THEORY, MATH571 ALGORITHMIC GAME THEORY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECON572 - Asset Pricing & Risk Management

Course Description
Integrates micro and macro economics with topics in finance. Utility maximization within mean variance framework for portfolio analysis and capital asset pricing model. Corporate valuation and discounted cash flow analysis. Capital structure and principal-agent problem will lead into a discussion of the Efficient Markets Hypothesis and underlying assumptions. Market pricing, forecasting, and financial crises. Graduate pairing for Economics 372; graduate students will receive additional writing assignments. Prerequisite: Economics 101 (or Economics 21 and Economics 22); Statistical Science 111, 130, 230, 210, or 250, or BME 244L; and Economics 205D or Mathematics 212.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON578 - Environment, Social, Governance (ESG) Investing

Course Description
This course addresses the challenges and opportunities in implementing an ESG investment strategy. Begins with a review of the history and definitions of ESG investing and highlights how financial institutions are increasingly building ESG products and practices. The course will emphasize applications in energy, environment, climate change, and social equity, and will include many guest speakers who are experts in the field. Students will enhance their understanding of impact investing, renewable energy, climate tech, corporate sustainability, venture capital, private equity, asset management, and equities research. Recommended prereqs: Econ 205, Econ 372, Environ 796, Energy 620, or instructor consent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENERGY578 ESG INVESTING

ECON581 - Investment Strategies

Course Description
Course examines issues in personal investment strategies. Topics include behavioral finance, closed-end and open-end mutual funds, data-mining, diversification, efficient market hypothesis, equity premium, exchange-traded funds, expenses and transaction costs, life cycle investing, market timing, passive versus active investing, survivorship bias, tax managed investing, time zone arbitrage, Robert Shiller's CAPE, Tobin's Q. Prerequisite: Economics 201D.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON590 - Selected Topics in Economics

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ECON590S - Selected Topics in Economics

Course Description
Seminar version of Economics 590.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ECON591 - Independent Study

Course Description
Individual non-research, directed reading, or individual project in a field of special interest under the supervision of a faculty member. Consent of instructor and director of graduate studies or MA program director required.

Grading Basis
Graded

Units

Min Units:
1.5

Max Units:
6

ECON593 - Research Independent Study

Course Description
Individual research in a field of special interest under the supervision of a faculty member, the central goal of which is a substantive paper or written report containing significant analysis and interpretation of a previously approved topic. Consent of instructor and director of graduate studies or MA program director required.

Grading Basis
Graded

Units

Min Units:
0.5

Max Units:
3

General Education Curriculum Codes
(R) Research

ECON601D - Microeconomics

Course Description
Topics include theory of consumer choice, demand, uncertainty, competitive and imperfectly competitive firms, factor markets, producer theory, and general equilibrium. Intended for master's students. Prerequisites: Intermediate microeconomics and multivariate calculus necessary. Matrix algebra and differential equations useful.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(QS) Quantitative Studies, (SS) Social Sciences

ECON602 - Macroeconomic Theory

Course Description
Micro-founded dynamic general equilibrium models have become the standard tool for macroeconomic analysis. Course provides guidance on how to work with these models. Our baseline New Keynesian model will feature sticky prices combined with monopolistic competition. We will show that the result in framework is appealing from an empirical point of view and we will use it to assess the desirability of alternative arrangements for the conduct of monetary policy. Prerequisite: Economics 601.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON605 - Advanced Microeconomic Analysis

Course Description
Topics include consumption, production, investment, uncertainty and information.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON606 - Advanced Macroeconomics II

Course Description
This course will briefly introduce you to some of the most widely used core models of modern macroeconomics. At the same time, it will provide a strong theoretical and practical background that can be helpful if you want to pursue further studies in (macro-)economics. In particular, we will build, step-by-step, one of the standard workhorses to study the business cycles, the real business cycles (RBC) model. We will start from its ancestor, the Solow growth model, we will pass by its origins, the deterministic neoclassical growth model, and we will work all the way up to its current dynamic stochastic general equilibrium (DSGE) model version.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON608D - Introduction to Econometrics

Course Description
Data collection, estimation, and hypothesis testing. Use of econometric models for analysis and policy. Reserved for Economics MA, MAPE, and MSEC students. All other students require instructor permission.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, QS - (QS) Quantitative Studies

ECON612 - Time Series Econometrics

Course Description
Empirical research in macroeconomics and international finance, providing students with a series of econometric tools for empirical analysis of time-series and an introduction to the current empirical research in macroeconomics, international finance, and forecasting. Small project and simple empirical research required. Prerequisites: Satisfactory performance (as judged by the instructor) in Econometrics (Economics 208D) plus a course in Linear Algebra or consent of the instructor. A course in macroeconomics (Economics 210D) is very useful but not strictly enforced.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(SS) Social Sciences

ECON613 - Applied Econometrics in Microeconomics

Course Description
Empirical research in microeconomics, with emphasis on three main sub-fields: labor economics, public economics, and industrial organization. Focus on current empirical research in these areas and student independent analysis of current research using statistical software. Same as Economics 411, but additional work required. Not open to students who have taken Economics 411. Prerequisite: Economics 208D or 608D.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON620 - Game Theory with Applications of Economics and other Social Sciences

Course Description
Game theory is a way of thinking about strategic situations. On one hand its content is normative: it provides guidelines for decision makers to predict others' actions and to recognize good and bad strategies. On the other hand its content is positive: it helps the social scientist to understand the nature of social interaction in various applications, in economics, political science, sociology and anthropology. We will learn new concepts, methods and terminology. Course will emphasize examples and applications. We will also play some games in class.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON621 - Non-Market Valuation

Course Description
This course will cover non-market valuation techniques typically used to measure the value of local public goods and (dis)amenities. These techniques are used to determine the 'benefits' side in a cost-benefit analysis, and are central to the formulation of regulatory policy in the US. In addition, they play an important role in local public finance, urban, and environmental economic analysis. Papers will be both theoretical and applied. Applications will focus on questions in public finance, as well as urban and environmental economics, with a strong focus on the latter. MA Micro Theory is recommended.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON622 - Continuous-Time Methods in Economic Theory

Course Description
Continuous-time techniques find wide application in econ and finance, beyond Black-Scholes option pricing formula. Used in dynamic models of learning and experimentation, contracting, reputation building, capital structure, financial frictions and macroeconomic crises, trade and information disclosure. Course prepares students to follow and interact with economic theory literature making use of continuous-time techniques. Course organized in two parts. 1) Present useful concepts and tools in stochastic calculus and stochastic control, with emphasis on the Brownian motion. 2) Discuss array of applications from microeconomic theory, macroeconomic, and corporate finance. Prerequisite: Econ 601D

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON623 - Forecasting Financial Markets

Course Description
Introduces statistical models for financial price and risk. ARMA, GARCH, Value-at-Risk. Covers both theory underlying these models and practical implementation using statistical software (MATLAB). Prerequisite: Economics 608D or 672.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON624 - International Trade

Course Description
This is a semester-long course in international trade. The objective of the course is to introduce students to current research topics on international trade as well as the tools and methodologies that are prevalent in the field.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON627 - Soviet and Post-Soviet Economic History

Course Description
This course traces economic factors leading to the downfall of the Russian Empire and the rise of the USSR, followed by an assessment of the collapse of the USSR. Particular attention is devoted to the NEP period, earlier Soviet economic models, the famine of the 1930s, the impact of the Great Patriotic War (WWII), industrialization and urbanization, Soviet planning, and declining productivity growth and life expectancy in the in the 1970s and 1980s. The course then explores the economic consequences of the USSR's collapse as well as the nature of recovery in various countries that followed. Prerequisite: Economics 201D and (Economics 208D or 204D, either of which can be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY627 SOVIET & POST-SOVIET ECON HIS, RUSSIAN627 SOVIET & POST-SOVIET ECON HIS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ECON627D - Soviet and Post-Soviet Economic History

Course Description

This course traces economic factors leading to the downfall of the Russian Empire and the rise of the USSR, followed by an assessment of the collapse of the USSR. Particular attention is devoted to the NEP period, earlier Soviet economic models, the famine of the 1930s, the impact of the Great Patriotic War (WWII), industrialization and urbanization, Soviet planning, and declining productivity growth and life expectancy in the in the 1970s and 1980s. The course then explores the economic consequences of the USSR's collapse as well as the nature of recovery in various countries that followed. Prerequisite: Economics 201D and (Economics 208D or 204D, either of which can be taken concurrently).

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

HISTORY627D SOVIET & POST-SOVIET ECON HIS, RUSSIAN627D SOVIET & POST-SOVIET ECON HIS

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ECON630 - Urban Economics

Course Description

Intro to urban econ focusing on location of economic activity in geographic space and implications for society. Course uses theoretical modeling, empirical analysis, and historical accounts to explore questions: Why cities exist, form where they do, and grow/decline? How economic activity is organized. Spatial patterns of work, housing, transportation. Environmental consequences of urban density, suburban sprawl, polluting firms. Determinants of price of land, house values, rents. Household sorting across neighborhoods. Causes/consequences of racial segregation, neighborhood gentrification, spatial concentration of poverty/wealth. Recommended prerequisites: Economics 201D and Economics 204D.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, R - (R) Research, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON635 - Economics of Education

Course Description

This is an intro to the economics of education. It introduces microeconomic theories of returns to education and econometric methods that are employed in investigating issues in education and pays attention to causal inference and predictions about impact of education policies. Primary focus of is on early childhood and K-12 education in the US. It explores educational outcomes, effectiveness of school financing, teacher labor markets, accountability and school choice. It studies reforms and interventions to increase accountability and production in education. Paired with Econ 435. Graduate students require additional assignments.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON642 - Development Economics: Theory, Evidence, and Policy

Course Description

This course studies the past, present, and future of economic development. We begin by briefly learning about patterns of economic development through time and across countries. We then study a selection of specific development policy challenges chosen from conflict, education, health, governance, infrastructure, international aid, labor markets, and trade. We emphasize learning the tools that economists use to study economic development: statistical analysis of large datasets, economic models, and historical case studies.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON643 - Empirical Methods in Gender and Family Economics

Course Description

Explores topics in economics of gender. Focus on theoretical models of labor and marriage markets, empirical applications, and applying economic tools to these topics. Find, analyze and interpret publicly available data. Develop skills to think critically about gender issues and evaluate policy interventions. Topics include gender gaps in wages and employment; education, majors and occupation choices; effects of parenthood; risk aversion, competitiveness, social norms; marriage and divorce, fertility, household specialization; the role of governments and firms. Paired with Economics 443. Graduate students require additional assignments. Prerequisite: Economics 608.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON644 - Equality of Opportunity: Theory, Evidence, and Policy

Course Description

Recent evidence highlights the potential for early interventions in mitigating inequality of opportunity. This course introduces students to the economics of such interventions. The course covers the datasets, quantitative tools, and theoretical framework that economists employ to answer policy-relevant questions impacting the lives of children. Topics of interest include the role of K-12 public education on intergenerational mobility, the causal effects of foster care, and the long-run economic consequences of early-life circumstances and government transfer payments. Paired with Econ 444; graduate students complete additional assignments. Prerequisite: Economics 608D.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON645 - Economics of Crime

Course Description
In the United States there is widespread interest across the political spectrum in reforming criminal justice policies. Social scientists have responded to this phenomenon with a flurry of research attempting to understand the circumstances that led to the creation of this new, expansive criminal justice system and its consequences. This course considers empirical research from economics literature on a variety of topics related to the criminal justice system. STATA or R required. Paired with Econ 445; graduate students complete additional assignments. Required prerequisite: Economics 608D.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON646 - Economics of Global Health

Course Description
Examines reciprocal relationships between income, poverty and health across countries with focus on identifying effect of health on development. Addresses structural problems in delivery and quality of healthcare that arise from cultural as well as economic causes. Attention given to challenges of healthcare financing, and tension between high-tech care and basic care in developing countries. Students examine empirical evidence from interventions affecting health including infant mortality reduction programs. Focus on issues of poverty alleviation and the promise of foreign aid.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON651 - Housing and the Economy

Course Description
Housing contributes over 16% to U.S. GDP and is the largest asset on the household sector's balance sheet, while the mortgage market constitutes the second largest U.S. credit market, just behind Treasuries and well ahead of corporate debt. In this course, we will study the economic forces driving housing and mortgage markets and its interactions with the wider macro economy. Topics include the drivers of house price dynamics, urbanization, gentrification and housing affordability, an introduction to real estate finance, mortgage design and default, the primary and secondary mortgage market and mortgage securitization, and the causes and consequences of housing driven recessions.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(QS) Quantitative Studies, (SS) Social Sciences

ECON652 - Economic Growth

Course Description
Examination of the enormous differences in living standards across countries, which reflect differences in growth experiences. Course studies both analytical foundations of modern growth theory and the most recent advances in modeling to shed light on old and new questions about such experiences. Graduate pairing for Econ 452; graduate students require additional work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON656S - International Monetary Economics

Course Description
Financial aspects of growth and income determination, and macroeconomic policy in open economies. Applications to exchange rate determination, capital markets, fluctuations in the trade balance and current account, monetary and fiscal policies in open economies, currency crises, and monetary reform. Significant research component required. Economics MA students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON658 - Economics Of Gun Violence

Course Description
Examines evidence from the recent empirical economics literature on the determinants and impacts of gun violence in the U.S. Topics studied include the effects of various gun policies, gun prevalence, and mass shootings on outcomes such as gun-related injuries and deaths, violent crime, mental health, and gun sales, as well as other idiosyncratic determinants of gun demand. Students will demonstrate ability to understand and interpret applied research in this area through evaluative summaries delivered via group presentations and written assessments along with several exams. Paired with Econ 458; graduate students are required to complete a capstone project.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON664 - Competitive Strategy and Industrial Organization

Course Description
Foundations of the field of industrial organization, including the models of oligopolistic competition, market structure, pricing, product differentiation, and potential antitrust issues. Emphasis on theory with support from specific industries, including telecommunications, retail, and airlines. Similar to Economics 464, but requires additional assignments. Not open to students who have taken Economics 464.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON665 - Market Power and Public Policy

Course Description
The purpose of antitrust laws is to control how firms attain and maintain their market position, presumably for the betterment of consumers, or at least for the benefit of society. Using a rigorous set of tools from microeconomic and game theory, this class will investigate the underpinnings of policies meant to deal with market power broadly defined, such as antitrust laws, the regulation of public utilities, the regulation of financial markets, and anti-dumping rules. The graduate section of this class will have additional assignments doing structural evaluation of mergers. This will involve a combination of estimation techniques and computational work for merger simulations. Prerequisite: Economics 608D.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON667 - Computer Modeling

Course Description
Introduction to the use of computer techniques in economic policy evaluation; policy applications to international economics, public finance and development economics; computer analysis of linearized and nonlinear models using Excel and GAMS. Students required to complete a major modeling project. Prerequisite: Economics 205D and 210D; Economics 208D recommended

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, QS - (QS) Quantitative Studies, SS - (SS) Social Sciences

ECON668 - Political Economics: Collective Decisions and Individual Values

Course Description
This course offers a theoretical introduction to collective decision making. The first part of the course surveys classic results in social choice theory. We address the extent to which a group of diverse individuals can have a coherent collective preference. The second part turns to models of electoral competition, political accountability, and political influence (such lobbying and special interests, agenda setting, and vote buying). The last part of the course focuses on (mis)information in collective processes. Do mass elections aggregate citizens' dispersed information? What are the electoral effects of media bias? Is political persuasion a concern? Pre-reqs: ECONOMICS 601 (620 strongly recommended).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(QS) Quantitative Studies, (SS) Social Sciences

ECON671 - Financial Markets and Investments

Course Description
The structure and workings of financial markets. Topics include risk-return relationships, portfolio selection, the capital asset pricing model, the arbitrage pricing theory, fixed income analysis, and aspects of derivatives. This is an advanced version of Economics 571 intended primarily for students in the Master's in Quantitative Financial Economics program. It employs a more mathematically rigorous and theoretically advanced approach than Economics 471 and 571.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON672 - Empirical Methods in High Frequency Financial Econometrics

Course Description
Focus is on understanding and applying principal results with emphasis on substantive applications. Topics generally include jump diffusions, semi-martingales, jump-robust volatility estimation, realized beta, jump regressions, local volatility estimation, diffusive beta, and measurement error (noise).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON673 - Mathematical Finance

Course Description
An introduction to the basic concepts of mathematical finance. Topics include modeling security price behavior, Brownian and geometric Brownian motion, mean variance analysis and the efficient frontier, expected utility maximization, Ito's formula and stochastic differential equations, the Black-Scholes equation and option pricing formula. Prerequisites: Mathematics 212 (or 222), 221, and 230 (or 340), or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH581 MATHEMATICAL FINANCE

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

ECON674 - Financial Derivatives

Course Description
A rigorous introduction to financial derivatives with applications. Topics include: binomial trees and geometric Brownian motion; European options, American options, forwards, and futures; put-call parity; the Black-Scholes-Merton pricing formula and its derivations; Delta and Gamma hedging; implied volatility; Merton jump-diffusion model; Heston model; GARCH(1,1) model. Prerequisites: Math 212 (or 222) and Math 230 (or 340) or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH582 FINANCIAL DERIVATIVES

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

ECON675 - Corporate Finance Theory: Governance, Incentives and Valuation

Course Description
Course uses tools of contract theory (information economics, mechanism design, and game theory) to analyze key features of corporate structure, performance, and valuation. Investigates critical interactions among stakeholders in a modern business enterprise (directors, executives, management, labor, financiers, shareholders, and regulators) in achieving goals and objectives of the corporation. Topics include: reform of corporate governance and auditing; role of private equity, financial markets, and takeovers; efficient determination of leverage, dividends, liquidity, and risk management, and design of managerial incentive packages. Prerequisite: Economics 205D.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, QS - (QS) Quantitative Studies, SS - (SS) Social Sciences

ECON676 - Empirical Asset Pricing

Course Description
This course develops, examines, and applies models for portfolio decisions by investors and the pricing of securities in capital markets. While developing portfolio theory, we will study the extensive empirical work that characterizes movements in security prices, evaluates alternative investment and asset pricing models, and attempts to test those models and interpret the implications of those tests. This is a research-oriented course with practical implementation of quantitative methods in finance, aimed at highly motivated and technically proficient undergraduate and master's students. Prerequisite: Economics 372 or 572 or 471 or 571.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ECON677 - Fixed Income Markets and Quantitative Methods

Course Description
The areas of focus will include: the value of money and discounted cash flow concepts, statistics, probability concepts, correlation & regression, understanding risks associated with bonds, and bonds with embedded options, and mortgages and the mortgage markets. Prerequisite: Economics 372.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, QS - (QS) Quantitative Studies

ECON678 - Derivatives for Speculation and Risk Management

Course Description
A rigorous introduction to financial derivatives focused on their use for hedging/risk management, establishing trades to reflect market outlooks and a means to create leverage. Students will learn theoretical underpinnings of derivative products and understand advantages and pitfalls they offer for traders and hedgers. Topics include: basics of bond and swap valuation, difference and overlap of forwards and futures, use and pricing of basic and exotic options, Black-Scholes-Merton formula, Value-at-Risk (VAR). Emphasis on markets-based implementation of technical material and real world examples of market disruption. Recommended prerequisite: Economics 608D or equivalent; multivariable calculus.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON690 - Selected Topics in Economics

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON690S - Selected Topics in Economics

Course Description
Seminar version of Economics 690.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON695 - Master's Research Seminar 1

Course Description

Provides introduction to empirical research in applied microeconomics, macroeconomics, and financial economics. Students work in teams of 2-4 led by participating faculty supervisors. Broad project areas will be determined in advance, and students will be invited to sign up based on their interest and available space. Projects may continue into a second semester (Econ 696) based on mutual agreement between faculty supervisor and student(s). Projects may relate to participating faculty supervisors' current research or may be in an area of student(s) interest, subject to a faculty member being willing to supervise. Prerequisite: Economics 608D.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1.5

Max Units:

1.5

General Education Curriculum Codes

SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON696 - Master's Research 2

Course Description

Students will complete the work they began on their research project in Economics 695S. Each student or team will present to the class during the semester; students not presenting will provide comments and feedback. Efforts will be focused on helping teams to implement, improve, and extend empirical methodology and interpret the results. Towards the end of the semester the focus will shift to editing and improving students' final research paper. Prerequisite: ECON 608D and ECON 695S.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1.5

Max Units:

1.5

General Education Curriculum Codes

SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ECON699 - Internship

Course Description

Open to students engaging in practical or governmental work experience during the summer or a regular semester. A faculty member in the department will supervise a program of study related to the work experience, including a substantive paper on an economics-related topic, maintaining significant analysis and interpretation. Consent of director of graduate studies required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

0.5

Max Units:

3

ECON700 - Mathematics for Economists

Course Description

Topics include linear and matrix algebra, topology, multivariate calculus, optimization and dynamic systems. For Economics incoming PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON701D - Microeconomic Analysis I

Course Description
Same in content as Economics 701, but with weekly discussion section. Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON702D - Macroeconomic Analysis I

Course Description
Same in content as Economics 702, but with weekly discussion section. Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON703D - Econometrics I

Course Description
Same in content as Economics 703, but with weekly discussion section. Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON704 - First Year Introduction to Research

Course Description
Discuss and analyze in detail recent papers drawn from literature relevant to various areas of Economics. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke Ph.D. students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECON705D - Microeconomic Analysis II

Course Description
An introduction to game theory and information economics with applications such as oligopoly, bargaining, auctions, and reputations. Prerequisite: ECON 701D.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON706D - Macroeconomic Analysis II

Course Description
Same in content as Economics 706, but with weekly discussion section.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON707D - Econometrics II

Course Description
Same in content as Economics 707, but with weekly discussion section. Prerequisite: Econ 703D. Open to Econ PhD Students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON747S - Monitoring, Evaluation, and Learning for Development (MELD) Seminar

Course Description
This seminar is focused on the real world of international development monitoring, evaluation, and learning (MEL). This is an applied course that covers the landscape of international development funding and research organizations. In addition to the actors involved in international development MEL, this seminar covers 'getting the work' (responding to a solicitation for MEL activities), as well as 'doing the work' (design and implementation of selected international development MEL projects). Because the topics covered are very broad, this seminar provides a high-level overview of the international development MEL landscape, and does not focus on the details of specific evaluation methods.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI727S MELD SEMINAR

ECON751 - The Political Economy of Institutions

Course Description

Provides survey of institutional analysis, focusing on recent developments in economics, political science and legal studies. Emphasis on analysis of institutional change and functions of institutions. Explores mechanisms by which constitutions, laws, customs and conventions undergo transformations. Topics include pace of institutional transformation, latent change, social inertia, political revolutions, links between beliefs/behaviors, and social functions of laws, customs and conventions. Readings and case studies reflect the interdisciplinary characteristic of field. Prerequisite or Corequisite: Economics 701D or Economics 601D or instructor consent.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

POLSCI762 POLITICAL ECONOMY INSTITUTIONS

ECON753 - Natural Resource Economics

Course Description

Addresses questions about natural resource scarcity using modern capital theory and optimal control theory to derive core results. Two objectives: provide students with a solid foundation in theory of natural resource economics, emphasizing tools and theoretical breadth to enhance research and teaching. Second objective to highlight contemporary themes in theoretical and empirical resource economics. Designed for PhD students in economics, finance, agriculture and resource economics, or public policy (with economics concentration). Prerequisite: one year PhD-level microeconomic theory and econometrics; review of differential equations recommended. Consent of instructor required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ENVIRON829 NATURAL RESOURCE ECONOMICS

ECON790 - Writing & Presenting in Economics

Course Description

Writing and presenting are crucial for professional success, but often are not done effectively by economists. In part, this is because economics graduate students aren't explicitly taught how to write and present. This module is designed to fill this gap by teaching basic principles of communication for young economists. Over 3 intensive weeks, you will learn foundational principles of writing and presenting, and then apply these concepts in brief but rigorous assignments that will require students to write and make presentations.

Grading Basis

Graded

Units

Min Units:

1.5

Max Units:

1.5

ECON791 - Independent Study

Course Description

Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic product. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECON799 - Internship

Course Description
Open to students engaging in practical or governmental work experience during the summer or a regular semester. A faculty member in the department will supervise a program of study related to the work experience, including a substantive paper on an economics-related topic, maintaining significant analysis and interpretation. Consent of director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0.5

Max Units:
3

ECON801 - Writing & Presenting in Economics

Course Description
Writing and presenting are crucial for professional success, but often are not done effectively by economists. In part, this is because economics graduate students aren't explicitly taught how to write and present. This course is designed to fill this gap by teaching basic principles of communication for young economists. You will learn foundational principles of writing and presenting, and then apply these concepts in brief but rigorous assignments that will require you to write and make presentations.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

ECON821 - Non-Market Valuation

Course Description
This course will cover non-market valuation techniques typically used to measure the value of local public goods and (dis)amenities. These techniques are used to determine the 'benefits' side in a cost-benefit analysis and are central to the formulation of regulatory policy in the US. In addition, they play an important role in local public finance, urban and environmental economic analysis. Papers will be both theoretical and applied Applications will focus on questions in public finance, urban and environmental economics, with a strong focus on the latter. Prerequisite: MA Micro Theory is recommended.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON823 - Forecasting Financial Markets

Course Description
Introduces statistical models for financial price and risk. ARMA, GARCH, Value-at-Risk. Covers both theory underlying these models and practical implementation using statistical software (MATLAB).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECON824 - International Trade I

Course Description
This is a semester-long course in international trade. The objective of the course is to introduce students to current research topics on international trade as well as the tools and methodologies that are prevalent in the field. Prerequisite: ECON 701D or 702D or 703D, or ECON 690 with topic International Economics

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECON825 - Industrial Organization

Course Description
This class is meant to introduce key concepts and tools in Industrial Organization. We will cover (1) Simple IO theory models of competition. (2) Enrich these models with real-world data by applying tools in demand estimation, including discrete choice models with random coefficients. (3) Methods of estimating production and cost functions, including control function methods. (4) Topics in vertical markets, such as double marginalization and bilateral bargaining, and their application to key service industries. (5) Models of industry evolution and dynamic oligopoly. These models are used to investigate policy debate of innovation and competition. Prerequisite: ECON 701D, 703D, 705D, and 707D

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON826 - Partial Identification: Theory and Applications in Industrial Organization

Course Description
Focus on the use of partially identifying models for applications in industrial organization, investigating a mix of methodological, theoretical, econometric, and applied issues. Particular areas of application in the IO literature will comprise a selection of research employing various models of auctions, entry, matching, and demand estimation. For each area of application, we will cover both the econometric theory underlying the partial identification analysis employed, as well as the motivation for the use of the partially identifying model in empirical practice. Economics 703D and Economics 707D. Economics Ph.D. Students only; all others require consent from the instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON827 - Firm Dynamics and Trade

Course Description
The course aims at familiarizing students with the current research in international trade and micro-founded macroeconomics. Main topics where heterogeneous agents play a key role are covered, such as productivity heterogeneity, industry equilibrium with heterogeneous firms, factor reallocation, concentration, firms and trade, and trade networks. Prerequisites: Econ 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ Ph.D. students only; all others require instructor consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON855 - International Finance and Macroeconomics

Course Description
Course provides a broad overview of core field models and explores active current research areas. Topics generally include international transmission of business cycles, global imbalances and external adjustment, international asset pricing and financial intermediation, the international monetary system, global financial cycle, determination of nominal and real exchange rates, exchange rate pass-through and invoicing, monetary and fiscal policy in the open economy, alternative exchange rate arrangements, and sovereign debt.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ECON872 - Empirical Methods in High Frequency Financial Econometrics

Course Description
Focus is on understanding and applying principal results with emphasis on substantive applications. Topics generally include jump diffusions, semi-martingales, jump-robust volatility estimation, realized beta, jump regressions, local volatility estimation, diffusive beta, and measurement error (noise). Paired with Economics 672. PhD students will be required to do additional work.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ECON881 - Special Topics in Applied Microeconomics

Course Description
Prerequisite: Econ 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1.5

Max Units:
3

ECON882 - Special Topics in Macro International Finance

Course Description
Prerequisites: Econ 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1.5

Max Units:
3

ECON883 - Special Topics in Econometrics

Course Description
Prerequisite: Econ 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1.5

Max Units:
3

ECON884 - Special Topics in History of Economics

Course Description
Prerequisites: Economics 701D, Economics 702D, Economics 703D, Economics 705D, Economics 706D, and Economics 707D. Open to Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ECON885 - Special Topics in Economic Theory

Course Description
Prerequisite: Economics 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ PhD students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1.5

Max Units:
3

ECON887 - Special Topics in Financial Econometrics

Course Description
Prerequisites: Econ 701D, 705D, 702D, 706D, 703D and 707D. Open to Econ Ph.D. students only. Open to Econ PhD students only.

Grading Basis
Graded

Units

Min Units:
1.5

Max Units:
3

ECON890 - Special Topics in Economics

Course Description
Prerequisites: Econ 701D, 702D, 703D, 705D, 706D, 707D. Only open to Econ PhD Students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

ECON890S - Special Topics in Economics

Course Description
Prerequisite: Econ 701D, 702D, 703D, 705D, 706D, 707D. Only open to Econ PhD Students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ECON898 - Directed Research

Course Description
Consent of the director of graduate studies and instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

ECON899 - Internship

Course Description
Open to students engaging in practical or governmental work experience during the summer or a regular semester. A faculty member in the department will supervise a program of study related to the work experience, including a substantive paper on an economics-related topic, maintaining significant analysis and interpretation. Consent of director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1.5

Max Units:
6

ECON901 - Applied Microeconomics Workshop

Course Description

Discuss and analyze in detail recent papers drawn from literature relevant to applied microeconomics. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke PhD students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions. Open to PhD Students Only.

Grading Basis

Credit / No Credit

Units

Min Units:

3

Max Units:

3

ECON902 - Macroeconomics and International Economics Workshop

Course Description

Discuss and analyze in detail recent papers drawn from literature relevant to macroeconomics and international economics. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke PhD students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions. Prerequisite: Students are required to have completed Econ 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ PhD students only.

Grading Basis

Credit / No Credit

Units

Min Units:

3

Max Units:

3

ECON903 - Econometrics Workshop

Course Description

Discuss and analyze in detail recent papers drawn from literature relevant to Econometrics. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke Ph.D. students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions. Prerequisite: Students are required to have completed Econ 701D, 702D, 703D, 705D, 706D, and 707D. Open to Econ Ph.D. students only.

Grading Basis

Credit / No Credit

Units

Min Units:

3

Max Units:

3

ECON905 - Microeconomic Theory Workshop

Course Description

Discuss and analyze in detail recent papers drawn from literature relevant to microeconomic theory. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke Ph.D. students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions.

Grading Basis

Credit / No Credit

Units

Min Units:

3

Max Units:

3

ECON908 - History of Economics Workshop

Course Description
Discuss and analyze in detail recent papers drawn from literature relevant to economic history. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke Ph.D. students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions.

Grading Basis
Credit / No Credit

Units

Min Units:
3

Max Units:
3

ECON909 - Economic Thought and History of Political Economy Workshop

Course Description
Discuss and analyze in detail recent papers drawn from literature relevant to Economic Thought/Hope. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke Ph.D. students present and evaluate their research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions.

Grading Basis
Credit / No Credit

Units

Min Units:
3

Max Units:
3

ECON911 - Applied Microeconomics Development

Course Description
Discuss and analyze in detail recent papers drawn from literature relevant to applied microeconomics. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke PhD students present and evaluate their research on regular basis. Participants required to make presentations as directed by instructor and play active role in discussions. Open to PhD students only.

Grading Basis
Credit / No Credit

Units

Min Units:
3

Max Units:
3

ECON951S - Applied Microeconomics Research

Course Description
For students anticipating working on thesis in area of Applied Microeconomics. Emphasis on reading and critiquing state of the art empirical work in microeconomics and presenting ongoing graduate student research. Students expected to contribute to discussion and present on regular basis. Prerequisite: Economics 901, 902, 903, 905, 908, or 909 concurrently.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ECON952S - Macroeconomics International Finance Research

Course Description

Discuss and analyze in detail recent papers on Macroeconomics and International Finance. Serves as formal environment in which students present and evaluate research on a regular basis. Participants required to make presentations as directed by instructor and play active role in discussions. Prerequisite: Economics 901, 902, 903, 905, 908, or 909 concurrently.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1.5

Max Units:

1.5

ECON953S - Research Seminar in Microeconometrics

Course Description

Facilitate research in applied microeconomics. Students and faculty present paper by leading research. Emphasis places on those papers that combine sophisticated techniques from econometrics and that integrate theory and empirical work. Participants encourages to present early version of own research. Prerequisite: Economics 901, 902, 903, 905, 908, or 909 concurrently.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1.5

Max Units:

1.5

ECON954 - Applied Microeconomics Development Research

Course Description

Discuss and analyze in detail recent papers drawn from literature relevant to applied microeconomics. Workshop serves as formal environment in which outside speakers present cutting edge research papers and Duke PhD students present and evaluate their research on regular basis. Participants required to make presentations as directed by instructor and play active role in discussions. Open to PhD students only.

Grading Basis

Credit / No Credit

Units

Min Units:

3

Max Units:

3

ECON955S - Research Seminar in Economics Theory

Course Description

Student's own field and research papers will be used as basis for developing modeling skills in microeconomic theory including Contract Theory, Decision Theory, Game Theory, General Equilibrium, Industrial Organization, Mechanism Design, political economy, and Public Economics. Explore and develop methods and techniques for deriving economically interesting implications of assumptions on primitives. Write and refine original research papers, present work, and evaluate fellow students in route to dissertation prospectus. Prerequisite: Economics 901, 902, 903, 905, 908, or 909 concurrently.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1.5

Max Units:

1.5

ECON957S - Research Seminar in Financial Econometrics

Course Description

For students anticipating working on thesis in the area of financial econometrics. Emphasis on research that combines sophisticated statistical and econometric techniques with current ideas and issues in asset pricing finance. Students expected to contribute to discussions and present ongoing research on a regular basis. Prerequisites: Field Examinations in Econometrics and Finance, Economics 901, 902, 903, 905, 908, or 909 concurrently.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ECON958S - History Of Economics Research

Course Description

For students anticipating working on thesis in area of History of Economics. Emphasis on reading and critiquing state of the art research in the history of economics and presenting ongoing graduate student research. Students expected to contribute to discussion and present on regular basis.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ECON690-82 - Topics in Mathematical Finance

Course Description

Topics of current research interest in mathematical models with relevant applications to finance. Prerequisites: Mathematics 230 or 340 or equivalent, or consent of instructor. Possible additional prerequisites depending on course content.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH690-82 TOPICS IN MATH FINANCE

ECON690S-1 - Selected Topics in Economics

Course Description

Two graduate course credit seminar version of Econ 690.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

ECS503 - Forest Ecosystems

Course Description
Emphasis on the processes by which forests circulate, transform, and accumulate energy and materials through interactions of biologic organisms and the forest environment. Ecosystem productivity and cycling of carbon, water, and nutrients provide the basis for lecture and laboratory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON503 FOREST ECOSYSTEMS

General Education Curriculum Codes
NS - (NS) Natural Sciences

ECS507DS - The Amazon: Evolution of Its Climate, Landscape, Ecology, and Human Civilizations

Course Description
Introduction to the natural and human evolution of the Amazon region of South America, from the Andes Mountains, to the rain forests, to the Amazon River delta. Exploration of the interactions among changes in landscapes, ecology, biota, climate, and human civilizations through time. Topics include human impacts on biodiversity, landscape processes, and resources from pre-history to modern societies, and their future outlook.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON507DS THE AMAZON

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

ECS507S - The Amazon: Evolution of Its Climate, Landscape, Ecology, and Human Civilizations

Course Description
Introduction to the natural and human evolution of the Amazon region of South America, from the Andes Mountains, to the rain forests, to the Amazon River delta. Exploration of the interactions among changes in landscapes, ecology, biota, climate, and human civilizations through time. Topics include human impacts on biodiversity, landscape processes, and resources from pre-history to modern societies, and their future outlook.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON507S THE AMAZON

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

ECS508 - Isotope Geochemistry

Course Description

This course will cover the origins, development and applications of isotope geochemistry, a field that uses variability in the abundance of naturally-occurring isotopes to study elemental cycling in nature. The course will begin with an overview of fundamentals: what are isotopes, and how are they fractionated by chemical reactions? It will then move into specific applications spanning geology, ecology, hydrology and even medicine. It will culminate with a segment on techniques for measuring isotopic ratios in natural samples.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

ECS509 - Paleoclimate

Course Description

Earth's climate is being impacted by humans. But how do we know this? And how does it compare to 'natural' climate variability in Earth's past? In this course, we take a historical view of the climate system to situate the present moment in geological context. We will first review the fundamentals of how Earth's climate system operates. Then acquaint ourselves with tools used to reconstruct past climate states and assess the evidence for past climate fluctuations recorded in the ancient sedimentary record. We will conclude with a student-led symposium in which various intervals of Earth history are discussed as analogs for future climate change.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

ECS511 - The Climate System

Course Description

Components of the climate system: observed climate change, concept of energy balance, basic circulation of the atmosphere and ocean, introduction to climate models, sample applications of climate models, interactions between the atmosphere/ocean/ and biosphere, land surface, cryosphere (snow and ice), and chemistry of the atmosphere. Prerequisite: consent of instructor.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

R - (R) Research, NS - (NS) Natural Sciences

ECS520 - Introduction to Fluid Dynamics

Course Description
Conservation equations for mass, momentum and heat, with an emphasis on large temporal and spatial scales; application to the earth, ocean, and environmental sciences. Some background in differential equations highly recommended.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

ECS524 - Water Quality Health

Course Description
Explore basic concepts of water quality and human health with focus on the global water cycle, global water demand and availability, chemical properties of water, contaminants in water, health implications, and environmental isotope hydrology. Highlights relationships between human activities, water scarcity, water quality degradation, and ecological and health consequences. Addresses some policy implications related to conflicts over water resources and impact of energy production on water resources. Prerequisites: prior knowledge of introductory calculus and chemistry or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON524 WATER QUALITY HEALTH, GLHLTH534 WATER QUALITY HEALTH, ENERGY524 WATER QUALITY HEALTH

ECS525 - Ocean & Freshwater Pollution: Sources and Impacts

Course Description
Introduction to the sources and impacts of pollution in marine and freshwater environments. Examination of biological pollutants, such as pathogens and invasive species; chemical pollutants, such as nutrient loading, oil spills, pesticides, and heavy metals; and physical pollutants, such as plastics and thermal perturbations. Principles of aquatic biogeochemistry, primary production, and food webs applied to ocean and freshwater pollution.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

ECS527 - International Water Resources

Course Description
Overview of the hydrology, hydrogeology, water quality, and management of major international water resources. Focus on cross-boundary international rivers and aquifers, up-stream versus down-stream water users, the politics of water sharing and disputes, the role of science in water management, and prospects and implications for future utilization of contaminated rivers and stressed aquifers. Examples from international rivers such as the Tigris, Euphrates, Nile, Jordan, Colorado, Indus, Ganges, and Mekong and international aquifer systems such as the Mountain aquifer, Gaza Strip, Disi, and Nubian basins in northern Africa.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

ECS530 - Remote Sensing in Coastal Environments

Course Description
Introduction to the field of remote sensing and image processing with focus on applications to coastal monitoring and currently open research questions. Students will acquire an operational knowledge of various remote-sensing tools and data types, with emphasis on their application in coastal areas. Content will include theory, in-class laboratory exercises, and projects with environmental applications. Prerequisite: introductory or AP physics preferred or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON530 REMOTE SENSING COASTAL ENV, CEE574 REMOTE SENSING COASTAL ENV

General Education Curriculum Codes
NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

ECS541 - Soils and Regoliths

Course Description
An analysis of fundamental physical, chemical, and biological soil properties and processes important to plant growth, carbon cycling, water relations, drainage, gas exchange, and mineral dissolution from the boreal zone to the tropics, from wildlands to cities. The course covers the science and management of soils and regoliths, classification and taxonomy, natural and human-altered formations, soil degradation and restoration, and soil quantitative problem solving. Field trips give reality to soil properties, soil geomprphologies, and land-use histories. Field trips on campus, Duke Forest and Duke Campus Farm.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON541 SOILS AND REGOLITHS

General Education Curriculum Codes
NS - (NS) Natural Sciences

ECS550 - Climate and Society

Course Description
Advanced, interdisciplinary course on causes, consequences, and future trajectory of climate change. Course will cover physical observations of past climate change, role of human activities in driving climate change to date, and impacts of climate change on human and natural systems. Course will analyze how socioeconomic choices affects future climate as well as factors influencing those choices, including risk analyses, geoengineering proposals, intergenerational equity, climate metrics and the media.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON552 CLIMATE AND SOCIETY

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

ECS550D - Climate and Society

Course Description
Advanced, interdisciplinary course on causes, consequences, and future trajectory of climate change. Course will cover physical observations of past climate change, role of human activities in driving climate change to date, and impacts of climate change on human and natural systems. Course will analyze how socioeconomic choices affects future climate as well as factors influencing those choices, including risk analyses, geoengineering proposals, intergenerational equity, climate metrics and the media.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON552D CLIMATE AND SOCIETY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, NS - (NS) Natural Sciences

ECS568S - Integrated Assessment Modeling—Examining Strategies for Meeting Energy and Environmental Goals

Course Description
The primary objective is to provide students with a hands-on opportunity to use an Integrated Assessment Model—the Global Change Assessment Model with state-level resolution (GCAM-USA)—to examine the air quality and GHG implications of new and emerging energy system technologies. To facilitate the use of GCAM-USA, students will use the GLIMPSE decision support software being developed at EPA. GLIMPSE provides a user interface for GCAM, which facilitates developing and running scenarios as well as visualizing results. Team projects - examinations of electric vehicles, renewable electricity, energy efficiency in buildings and potentially other topics of interest to students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON568S INTEGRATED ASSESSMENT MODELING

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

ECS570D - Geohazards and Disaster Risk: From Complex Problems to Sustainable Solutions

Course Description
We explore the geohazards responsible for recent disasters, both rapid onset (earthquakes, tsunamis, cyclones), and slow onset (climate change, famine) to better understand the complex vulnerabilities of the coupled human-environment system in order to propose viable solutions aimed at reducing economic losses and loss of life.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

ECS575S - Mineral Resources

Course Description
Introduction to the mineralogy, geological setting, and genesis of metallic and non-metallic deposits (gold, copper, iron, aluminum, gypsum, phosphates, diamonds, e.g.). Includes methods of mineral exploration and exploitation, and the environmental consequences of utilizing mineral resources. An introductory geology course background useful but not required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

ECS590 - Special Topics in Earth and Climate Sciences

Course Description
Content to be determined each semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ECS590S - Special Topics in Earth and Climate Sciences

Course Description
Content to be determined each semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ECS617 - Advanced Climate Dynamics: Ocean-Atmosphere Interactions

Course Description
To understand the climate system and climate change requires an understanding of the fundamental mechanisms of ocean-atmosphere interactions. The course explores both natural climate fluctuations arising from ocean-atmosphere interactions and their historical and future changes resulting from anthropogenic agents. Topics encompass a wide range of global and regional climate phenomena, including El Niño/La Niña cycles, hurricanes, monsoons, and short term cycles such as the Madden-Julian Oscillation. Recommended Prerequisites: College-level differential and integral calculus, introductory physics, and introductory ocean/atmosphere science, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

ECS690 - ECS Special Topics

Course Description
Special topics in Earth and Climate Sciences

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ECS690D - ECS Special Topics

Course Description
Lecture/discussion special topics

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ECS690L - ECS Special Topics

Course Description
Lecture/lab special topics

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ECS690S - ECS Special Topics

Course Description
ECS special topics, seminar version

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

EDUC518S - Approaches and Practices in Second Language Pedagogy

Course Description
Introduction to the history and current trends in language teaching with the goal of acquiring the knowledge and skills for informed, effective and reflective language instruction. Focus on psycholinguistic and sociolinguistic dimensions of second language acquisition, key concepts of second language teaching and their applications, and integration of culture and literature in language instruction. Compares features of the target and source languages. Assignments include review of teaching materials, creating lesson plans and modules, and writing an essay stating teaching philosophies. Open only to students who have a background in Asian languages.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES518S SECOND LANGUAGE PEDAGOGY, LINGUIST518S SECOND LANGUAGE PEDAGOGY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry

EDUC590 - Special Topics

Course Description
Selected topics in education.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EDUC591 - Independent Study

Course Description
Directed readings in a field of special interest under the supervision of a faculty member, the central goal of which is a substantive paper or project on a previously approved topic. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EDUC601S - Psychology Teaching Seminar

Course Description
Exploration of issues relevant to teaching in psychology and related disciplines. Focus on a variety of pedagogical issues: course development, teaching strategies, preparation of materials, evaluation, classroom management. Strong emphasis also on ethical issues bearing on pedagogy. Open to undergraduates serving, or scheduled to serve, as teaching assistants in psychology, as well as to graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY601S PSYCHOLOGY TEACHING SEMINAR

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

EDUC620 - Nature and Needs of the Gifted Learner: Introduction to Characteristics and Educ/Affective Needs

Course Description
Introduction to characteristics and unique educational and affective needs of gifted learners. Analysis of philosophical considerations, historical perspectives, definitions and types of giftedness, incidence, and evaluation procedures. Cultural comparisons of the manifestations of giftedness, ways of reversing underrepresentation of minority students in programs for the gifted, and affective social-emotional topics/issues relating to giftedness. This course is a post-bacc, non-degree course not open to Duke undergraduates. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EDUC621 - Methods and Materials for Teaching the Gifted Learner: Procedures for Differentiating Instruction

Course Description
Fundamental procedures for differentiating instruction for gifted and talented students. Comparison of theories and research models regarding instructional practice. Focus on research based instructional strategies. Apply, analyze, implement, and evaluate various methods and models of gifted education. This course is a post-bacc, non-degree course not open to Duke undergraduates. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

EDUC622 - Differentiating Curriculum for the Gifted Learner: Program Planning and Curriculum Development

Course Description
Organize and deliver appropriate curriculum for gifted and talented students. Focus on program planning, exemplary program models, development of differentiated curriculum with appropriate modifications to content, process, product and learning environment.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EDUC623 - Practicum and Seminar in Gifted Education

Course Description
Supervised practicum with gifted learners in a differentiated education program. Students plan, develop, and evaluate educational experiences, with a special emphasis on the social and emotional development of gifted learners. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EDUC640 - The History and Future of Higher Education

Course Description
Examination of the long history, from Socrates forward, of debates on meaning, purpose, and access to higher education, with special emphasis on the role of humanistic, critical thinking as foundational to all aspects of higher education. Primary focus on Western tradition of postsecondary education, plus a look at different international and alternative models, including apprenticeship, vocational and skills training, monastic training, community-based learning, lifelong learning, and online peer-to-peer open learning. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS640 HISTORY/FUTURE HIGHER EDUCATIO

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

EDUC690S - Selected Topics Seminar

Course Description
May be repeated. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EDUC758S - Digital Durham

Course Description
Bass Connections course. Representing Durham past and present with digital media. Digitize historical and cultural materials, research in archives and public records and present information through various forms including web pages, databases, maps, video and other media. Analysis of social impact of new representations of place and space. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC758S DIGITAL DURHAM, ISS758S DIGITAL DURHAM, HISTORY758S DIGITAL DURHAM

EDUC791 - Graduate Independent Study

Course Description
Directed readings in a field of special interest under the supervision of a faculty member, the central goal of which is a substantive paper or project on a previously approved topic at the graduate level.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

EDUC794S - Research Synthesis and Meta-Analysis (G)

Course Description
Recent developments in research synthesis in the behavioral and medical sciences. Topics include: problem formulation; scientific communication; methods for locating research; problems in retrieving data from secondary sources; judging the quality of research; effect size estimation; analyzing variance in effect sizes across studies. Prerequisites: Statistics through analysis of variance. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY769S RESEARCH SYNTHESIS

EGR505 - Oral Communication Skills for Engineers

Course Description
Designed for graduate engineering students who are non-native English speakers. Gain the skills necessary to confidently navigate the use of oral English. Learn social and academic norms needed for academic success and build interactional competence. Learn to deliver a self-introduction, brief overview of research/degree program/professional experience, and navigate small talk and social interactions through the development of cultural contexts and an understanding of conversational mechanics. Build the skills needed to actively participate in classes, seek help from multiple sources, and navigate productive interactions with faculty. Open only to Pratt graduate students.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EGR506 - Academic & Professional Writing for Engineers I

Course Description
This writing course is designed for graduate engineering students who are non-native English speakers. The focus will be on writing and revising such that the results are clear and concise. Students will produce a variety of academic and professional documents pertinent to engineers. Additionally, students will analyze the written work of peers and provide relevant feedback. Open only to Pratt graduate students.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EGR545 - Design Climate I: Discover

Course Description
Over the two-semester Design Climate course sequence, student teams use Design Thinking to create triple bottom line startups to address climate challenges posed by industry professionals or faculty. In Design Climate I (fall), student teams develop business ideas by working through the first three phases of Design Thinking: stakeholder empathizing, opportunity definition, and solution ideation. The semester culminates with a pitch on the startup idea that will be further vetted in Design Climate II (spring). Through this process, students learn directly from industry professionals and cultivate capabilities in Design Thinking, entrepreneurship, project management, sustainable product development, climate fundamentals, and business competencies. For more information, visit our website at https://designclimate.duke.edu. We highly encourage students to only register if you plan on taking both Design Climate I and II.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON545 DESIGN CLIMATE I: DISCOVER, I&E545 DESIGN CLIMATE I: DISCOVER

General Education Curriculum Codes
R - (R) Research

EGR546 - Design Climate II: Develop

Course Description
Over the two-semester Design Climate sequence, student teams use design thinking to develop triple bottom line startups that address climate challenges posed by industry professionals or faculty. In Design Climate II, student teams develop their business ideas by prototyping, gathering market validation data, and developing their business model. The semester culminates in a pitch of the startup ideas to members of the entrepreneurship community. Students cultivate capabilities in design thinking, entrepreneurship, project management, sustainable product development, climate fundamentals & business competencies. Includes local field trips.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON546 DESIGN CLIMATE II: DEVELOP, I&E546 DESIGN CLIMATE II: DEVELOP

EGR590 - Special Topics in Engineering

Course Description
Subjects of an interdepartmental nature in engineering tailored to the advanced undergraduate student or first- or second-year graduate student. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

EGR705 - Academic Presentations for Engineers

Course Description
Course designed for graduate engineering students who are non-native English speakers. Gain the skills necessary to deliver successful engineering-specific presentations. Through feedback, you will learn your strengths and weaknesses and will develop as a successful speaker. Practice delivering both short-form presentations and longer form formal presentations, as required by your particular field of study in engineering. Where possible, presentation practice in class will be related to your engineering course work.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EGR706 - Academic & Professional Writing for Engineers II

Course Description
This writing course is designed for graduate engineering students who are non-native English speakers. The focus will be on writing and revising that result in clear, effective and concise products. Students will produce a variety of academic and professional documents pertinent to engineers. Additionally, students will analyze the written work of their peers and provide them with relevant feedback.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EGR790 - Special Topics in Engineering

Course Description
General engineering topics intended for graduate students only, and interdepartmental in nature. Instructor consent is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

EGR790S - Special Topics in Engineering for Graduate Students

Course Description
Study arranged on broad engineering topics in which the faculty have a particular interest and competence as a result of research or professional activities. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

EGR590-1 - Special Topics in Engineering

Course Description
Subjects of an interdepartmental nature in engineering tailored for entry-level graduate students.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

EGR790-1 - Special Topics in Engineering

Course Description
Subjects at an intermediate or advanced level in engineering that are interdepartmental in nature. Courses tailored to graduate students that have the introductory knowledge required. Variable Credit.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

EHD790 - Special Topics in Education and Human Development

Course Description
Topics vary by semester. Check individual semester offerings for additional prerequisites. Instructor permission usually an option.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EHD790S - Special Topics in Education and Human Development

Course Description
Topics vary by semester. Check individual semester offerings for prerequisites. Instructor consent may be required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EHD795 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EHD795T - Bass Connections Education & Human Development Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore factors that contribute to positive outcomes across the human lifespan, including influences on education, health, and human flourishing. Teams may also include external partners. A team's work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, data collection and analysis, field work, and other relevant learning experiences. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EHD796 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

EHD796T - Bass Connections Education & Human Development Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore factors that contribute to positive outcomes across the human lifespan, including influences on education, health, and human flourishing. Teams may also include external partners. A team's work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, data collection and analysis, field work, and other relevant learning experiences. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

EHD795-1 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

EHD796-1 - Bass Connections: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing social issues. Teams may also include postdoctoral fellows, visiting fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1.5

Max Units:
1.5

ENGLISH537S - Shakespeare & Co.: English Renaissance Drama

Course Description
Interrogates drama of Marlowe, Shakespeare, Jonson, and Middleton, and other playwrights from only the second time in world history when the genre conducts a culture's dominant intellectual currents. Umbrella questions: ethnicity, proto-feminism, sexual orientation, secularism, aesthetic-commercial rivalry, mercuriality, Shakespearean exceptionalism. In addition to edited play-texts we will also use major new electronic resources. Grade based equally on class discussion and a twenty-page essay.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
4

Crosslisted Courses
MEDREN637S SHAKESPEARE & CO.

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

ENGLISH538S - Special Topics in Renaissance Prose and Poetry: 1500 to 1660

Course Description
Selected topics. Satisfies the Area I requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN632S RENAISS PROSE/POETRY TOP

ENGLISH540S - Special Topics in Restoration and Eighteenth-Century Literature (DS3)

Course Description
Seminar version of English 540.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ENGLISH545S - Romantic Literature: 1790 to 1830

Course Description
Selected topics. Satisfies the Area II requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ENGLISH546S - Special Topics in Victorian Literature

Course Description
Satisfies the Area II requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ENGLISH550S - Black Culture and Performance

Course Description
What is black embodiment? Black feeling? Black performance? This course explores these questions, among others, by taking up three major cultural movements: New Negro/Harlem Renaissance; Black Arts Movement; and contemporary 'post-blackness.' We will study black drama, performance art, visual art, and film. Major writers and artists might include Marita Bonner, Zora Neale Hurson, Adrienne Kennedy, Alice Childress, Ntozake Shange, Amiri Baraka, Aleshea Harris, Brendan Jacobs-Jenkins, Barry Jenkins, and Jackie Sibblies Drury. We will also read theories of identity formation, racialized experience, and black life, among other prevailing concerns in Black (Performance) Studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
THEATRST550S BLACK CULTURE & PERFORMANCE, AAAS550S BLACK CULTURE & PERFORMANCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance

ENGLISH571S - Dystopia, Speculation, and the Transhuman: Octavia Butler

Course Description
This course will examine the work of science fiction writer, Octavia Butler. Critically engaging her novels and short stories, we will discover and work through a series of themes and tropes - dys(u)topia, the transhuman, temporality, the apocalyptic, survival, and hierarchical thinking as the root of racism and sexism. We will ask questions in this course about the relationship between sci-fi, speculative fiction, and the imagination of the present. In addition, Butler's fiction, which imagines various forms of miscegenation and interspecial contact, will invite us to deconstruct and re-imagine the figure of the human.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS511S OCTAVIA BUTLER, RELIGION505S OCTAVIA BUTLER, GSF511S OCTAVIA BUTLER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ENGLISH581S - Mimesis in Theory, Embodied Practice, and Literary Arts

Course Description
Theoretical exploration of mimesis from Plato and Aristotle to Tarde, Lacan, Girard, Rancière, Lacoue-Labarthe, Butler, Malabou, Cassin, and Latoo. Additional emphasis on mimesis in human and animal development and social/behavioral practice, with interdisciplinary intertexts from fields ranging from neuroscience to genomics. Frequent departures from paradigmatic and empirical evidence to revel in the sensory and intuitive renewal of literary/artistic mimetic agency and apperception. Course taught in French, with occasional sources in English. Flexible language of assignments and English discussion section for graduate students outside of the French field.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH507S MIMESIS IN THEORY AND PRACTICE, ARTHIST509S MIMESIS IN THEORY AND PRACTICE, LIT507S MIMESIS IN THEORY AND PRACTICE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ENGLISH582S - Wittgensteinian Perspectives on Literary Theory

Course Description
Key questions in literary theory reconsidered from the point of view of ordinary language philosophy (Wittgenstein, J. L. Austin, Cavell). Topics will vary, but may include: meaning, language, interpretation, intentions, fiction, realism and representation, voice, writing, the subject, the body, the other, difference and identity, the politics of theory. New perspectives on canonical texts on these subjects.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT681S WITTGENSTEIN AND LIT THEORY, PHIL681S WITTGENSTEIN AND LIT THEORY

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ENGLISH591 - Special Readings - Independent Study

Course Description
Independent study. Department consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ENGLISH616S - Literature and Philosophy

Course Description
Traditionally, literary scholars apply philosophy to literature; philosophers mine literature for examples illustrating already existing philosophies. This course aims to find ways for philosophy and literature to shed light on each other. Can literature do philosophical work? How can philosophy be read? We will first study classical encounters between philosophy and literature in Plato, Aristotle, Hegel and Kant. Philosophers might include Sartre, Beauvoir, Fanon, Murdoch, Nussbaum, Derrida, Diamond, and Cavell. Theater and film: Greek tragedy, Shakespeare, Ibsen, Hollywood movies. Novels by Coetzee, Sebald, and recent autofiction. A major focus of the class will be ethics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT616S LITERATURE AND PHILOSOPHY, PHIL616S LITERATURE AND PHILOSOPHY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

ENGLISH620S - Film-philosophers/Film-makers

Course Description
Examines intersections between film, critical theory, and continental philosophy, from standpoint of spectatorship. Focuses on different approaches to film theory from a philosophical prism, and on different philosophers addressing film as a mediated visual interpretation of reality, the world, our own bodies, and societies within which we reside. Addresses film-making as an act of philosophical thought—of thinking about the world and representing subject's position within the world. Topics include, existential phenomenology, Deleuzian metaphysics, feminism, semiotics, political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT620S FILM-PHILOSOPHERS-FILM-MAKERS, CINE622S FILM-PHILOSOPHERS-FILM-MAKERS, VMS622S FILM-PHILOSOPHERS-FILM-MAKERS, DOCST620S FILM-PHILOSOPHERS-FILM-MAKERS

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ENGLISH680S - Blackness, Social Death, and the Volatile Sacred

Course Description
In recent years, we have witnessed a renewed energy around theorizing blackness and its unsettling presence in the world. In addition to endeavors to think through the antagonistic relationship between blackness and the ideal human, authors have addressed topics such as black gender, the affinities and tensions between blackness and queerness, the ways in which blackness interrupts the logic of property, and the particular qualities of anti-black violence. In this course, we will pursue an aspect of contemporary black thought that has been central but undeveloped -- how blackness reimagines the religious and the sacred. Authors: Spillers, Wynter, Hartman, Sharpe, Moten, Glissant, Gumbs.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS602S BLACKNESS,SOCIAL DEATH,SACRED, RELIGION605S BLACKNESS,SOCIAL DEATH,SACRED, GSF602S BLACKNESS,SOCIAL DEATH,SACRED

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ENGLISH691S - Black Sonic Culture—Analog to Digital

Course Description
The course will examine the production, reproduction and distribution Black (African Diasporic) 'Sound'--inclusive of, but not exclusive of various musical cultures--in the creation of Black Sonic Culture(s) that were in conversation with and counter to Black Literary Culture, Black Visual Culture and Black Performance traditions. The course, in particular, will examine the impact on the transition from analog sound to digital sound.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS622S BLACK SONIC, LIT691S BLACK SONIC, MUSIC691S BLACK SONIC

General Education Curriculum Codes
IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

ENGLISH765S - Existentialism, Nihilism, and Religion

Course Description
This course engages the relationship between nihilism, which claims that there are no secure foundations that provide life with meaning and purpose, and existentialism, a philosophy that prioritizes the freedom and responsibility of the individual subject against essential truths that precede existence and human striving. We will interrogate what it means to live in the afterlife of what Nietzsche calls the 'death of God' and question whether this spells the end of religion, spirituality, and the need for practices of the sacred. We also interrogate how race and gender pertain to questions about existence, being, nothingness, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION765S EXISTENTIALISM, NIHILISM, RELI, AAAS765S EXISTENTIALISM, NIHILISM, RELI, GSF765S EXISTENTIALISM, NIHILISM, RELI

ENGLISH767S - How Blackness Thinks

Course Description
This course examines current directions in conceptualizing black social life and performance. Examples are 'black feminist theory and practice,' 'queer of color discourse,' and more recently 'Afro-pessimism' and 'Black Optimism.' The guiding premise of the course is that when understood as exceeding racial category, blackness emerges as out(sider)ness, as differentiated social practice internal to which is a mode of thinking, a practice of study, perhaps even a certain performance of the sacred that is at once connected with the religious and the secular but that cannot be equated with either. In considering this outness of black thinking, authors we may read include: Fanon, Wynter, Spillers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS767S HOW BLACKNESS THINKS, RELIGION767S HOW BLACKNESS THINKS

ENGLISH822S - Writing is Thinking

Course Description
This course aims to teach graduate students at any level, from first-year students to dissertation writers, how to write well and with enjoyment, and how to make writing a part of their daily life as creative intellectuals. We will cover questions of style, voice, and audience, and learn to read academic prose as writers. We will also focus on how to move from note-taking to writing, and develop an understanding of different academic genres. The course will be writing intensive. Consent of instructor is required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT822S WRITING IS THINKING

ENGLISH823S - History of Literary Criticism

Course Description
This course provides students with a concise historical and theoretical overview of university-based literary criticism, with the goal of enabling graduate students to better understand--and hence, situate their own projects within--the history of their discipline.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ENGLISH826S - Contemporary Genre Fiction: The Global Novel

Course Description
This course examines the emergence of novels in various parts of the globe that address a readership beyond their respective nations or regions of origins, sometimes even beyond the novelist's national language. Under the heading of 'Contemporary Genre Fiction,' we will look particularly at adaptations and transformations of sub-genres of the novel in different contexts. Among the genres we will consider are: detective novel; science fiction; novel of manners; romance; historical and philosophical novel.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST826S CONTEMPORARY GENRE FICTION, LIT826S CONTEMPORARY GENRE FICTION

ENGLISH827S - The Global Novel: Post, What?

Course Description
This course examines the recent emergence of novels in various parts of the globe that address a readership beyond their respective nations and regions of origins, sometimes even beyond the novelist's national language. These novels make a point of declaring that the form of the novel traditionally organized around the experience of a representative individual is now obsolete. Critics and scholars tend to describe these novels as displaying specific forms of 'post-ness,' whether post-modern, post-human, post-apocalyptic, post-revolutionary, and post-exotic.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT827S THE GLOBAL NOVEL: POST WHAT?, ROMST827S THE GLOBAL NOVEL: POST WHAT?

ENGLISH860S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, LIT850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

ENGLISH890 - Special Topics

Course Description
Topics vary by semester. See synopsis for more details. Department consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ENGLISH890S - Special Topics Seminar

Course Description
See synopsis for more details.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ENGLISH890T - Tutorial in Special Topics

Course Description
Tutorials by a faculty member for two or more students having a regular study session with a professor. Consent of instructor and Director of Graduate Studies required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ENGLISH891 - Special Readings

Course Description
Special Readings

Grading Basis
Graded

Units

Min Units:
1

Max Units:
6

ENGLISH900S - African American Religion Through the Literary Imagination

Course Description
In this course, we will examine and trouble the notion of African American religion by reading different genres of literature. By engaging slave narratives, autobiography, fiction, and the critical essay, the aim of the course will be to re-imagine categories that are associated with black religion: piety, spiritual, opacity, trauma, liberation, transgression, anguish, intersectionality, and the 'afterlife of slavery.' Two general ideas will motivate the direction(s) of the course. For one, black religiosity is not reducible to institutional forms like the church. Secondly, any endeavor to study black piety, or blackness more generally, requires multiple genres and approaches.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION900S AFRICAN AMERICAN RELIGION/LIT, AAAS900S AFRICAN AMERICAN RELIGION/LIT

ENGLISH996 - Practicum in Teaching College English

Course Description
Provides graduates students in the English department with pedagogical training in the teaching of college-level composition and English department courses. Open only to English department graduate students in years 4 and above. Department consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ENGLISH590-1 - Special Topics I

Course Description
Subjects, areas or themes that cut across historical eras, several national literatures, or genres, medieval to early modern periods. See synopsis for more details. Satisfies the Area I requirement for English majors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ENGLISH590-2 - Special Topics II

Course Description
Subjects, areas or themes that cut across historical eras, several national literatures, or genres, eighteenth and nineteenth centuries. See synopsis for more details. Satisfies Area II requirement for English majors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ENGLISH590-4 - Special Topics in Criticism

Course Description
See synopsis for more details. Satisfies the Criticism, Methodology, Theory (CTM) requirement for English majors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ENGLISH590S-1 - Special Topics Seminar I

Course Description
Subjects, areas or themes that cut across historical eras, several national literatures, or genres, medieval and early modern period. See synopsis for more details. Satisfies Area I requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN590S-3 SP TOP SEMINAR I

ENGLISH590S-2 - Special Topics Seminar II

Course Description
Subjects, areas or themes that cut across historical eras, several national literatures, or genres. See synopsis for more details. Satisfies Area II requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ENGLISH590S-3 - Special Topics Seminar III

Course Description
Subjects, areas or themes that cut across historical eras, several national literatures, or genres, 1860 to the present. See synopsis for more details. Satisfies the Area III requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ENGLISH590S-4 - Special Topics Seminar in Criticism, Theory, or Methodology

Course Description
See synopsis for more details. Satisfies the Criticism, Theory, or Methodology (CTM) for English majors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ENGLISH590S-5 - Special Topics Seminar on Diversity

Course Description
Examines a literary or cultural topic from the perspective of a non-dominant group or a region of the world. See synopsis for more details. Satisfies the Diversity requirement of the English major.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ENRGYEGR531 - Power Electronic Circuits for Energy Conversion

Course Description
Efficient conversion of electrical energy is critical for electric and hybrid vehicles, wind and solar energy, power grids, computers, medical devices, and portables. This course teaches analysis and design of power electronic circuits for energy conversion, including circuit operation (converter topologies, steady-state modeling, switch realization), converter control (ac modeling, small-signal transfer functions, feedback), and magnetics (inductors, transformers). The course shares lectures with ECE/Energy Engineering 431, but has extended assignments. Prerequisite: ECE 230L or Engineering 224L or graduate student standing. Not open to students who have taken ECE 431 or Energy Engineering 431.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE531 PWR CKTS FOR ENERGY CONVERSION

ENRGYEGR590 - Special Topics in Energy Engineering

Course Description
Study arranged on a special topic in which the instructor has particular interest and competence. Topics vary by section.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EOS509S - Paleoclimate

Course Description
Nature and mechanisms of climate variability throughout Earth history. Topics include general theory of climate, paleoclimate modeling and comparisons with observations, methodologies of reconstructing past climate variations, the observational record of paleoclimate extending from the Precambrian through the Ice Ages and Holocene to present, and the impact paleoclimate on biotic evolution/paleogeography and human cultural history. Consent of instructor required.

Grading Basis
GRD - Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECS209 PALEOCLIMATE

EOS617 - Advanced Climate Dynamics: Ocean-Atmosphere Interactions

Course Description
To understand the climate system and climate change requires an understanding of the fundamental mechanisms of ocean-atmosphere interactions. The course explores both natural climate fluctuations arising from ocean-atmosphere interactions and their historical and future changes resulting from anthropogenic agents. Topics encompass a wide range of global and regional climate phenomena, including El Niño/La Niña cycles, hurricanes, monsoons, and short term cycles such as the Madden-Julian Oscillation. Recommended Prerequisites: College-level differential and integral calculus, introductory physics, and introductory ocean/atmosphere science, or consent of instructor.

Grading Basis
GRD - Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECS617 ADVANCED CLIMATE DYNAMICS

General Education Curriculum Codes
Crosslisted, (NS) Natural Sciences

ETHICS504A - Marine Protected Area Monitoring and Management

Course Description
An interdisciplinary course that addresses concepts, issues, and approaches relevant to marine protected areas (MPAs) and their impacts on marine ecosystems and coastal people. Course will address key topics on MPA design, implementation, management, monitoring, and evaluation. Attention will be given to sensitive marine ecosystems (e.g. coral reefs) and resource-dependent fishing and tourism communities. Using real world case studies, students will apply introduced concepts and quantitative approaches to questions on MPA monitoring and evaluating their impacts. Students will engage with the course material primarily through group discussions, problem sets, and lectures. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON504A MARINE PROTECTED AREAS, MARSCI504A MARINE PROTECTED AREAS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

ETHICS510S - Adversarial Ethics

Course Description
Course attempts to identify general principles for designing the rules & regulations for deliberately adversarial institutions (ie; markets, electoral systems/ legislatures, criminal law, warfare, sports). Looks at the special virtues of sportsmanship, professionalism, business ethics, etc. people are expected to follow within these hyper-competitive contexts. By examining ways the criteria for being an ethical businessperson, lawyer, soldier, and so on may differ from the criteria for simply being an 'ethical person', this course seeks to prepare students for future professional roles in these adversarial domains. No formal pre-requisites.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL510S ADVERSARIAL ETHICS, POLSCI585S ADVERSARIAL ETHICS

General Education Curriculum Codes
(EI) Ethical Inquiry, (SS) Social Sciences

ETHICS520S - Don Quixote in the Real World: From Escapism to Engagement

Course Description
This seminar shifts the study of the novel as a literary artifact to illuminate the synergy among the fields in the humanities, political economy, and law unique to the early modern period. Diverse readings introduce how the novel encompasses centuries of humanistic thought establishing modern parameters of moral philosophy, law, history, and economic thought. Cervantes' concern with social justice, freedom, empathy, and legal protection reflect on current moral questions about migration, difference, power, and wealth. Recent films and performances based on the novel re-assess Quixotism as engagement and activism.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH520S DON QUIXOTE IN THE REAL WORLD, LIT538S DON QUIXOTE IN THE REAL WORLD, MEDREN620S DON QUIXOTE IN THE REAL WORLD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ETHICS551DA - International Conservation and Development

Course Description
Interrelated issues of conservation and development. Topics include the evolution of the two concepts and of theories regarding the relationship between them, the role of science, values, ethics, politics and other issues in informing beliefs about them, and strategies for resolving conflicts between them. While attention will be given to all scales of interaction (i.e. local, regional, national, international), the focus will be on international issues and the 'north-south' dimensions of the conservation and development dilemma. Examples from marine and coastal environments will be highlighted. Consent of instructor required. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON551DA CONSERVATION AND DEVELOPMENT, MARSCI551DA CONSERVATION AND DEVELOPMENT

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, SS - (SS) Social Sciences

ETHICS565S - Attending to Persons in Pain

Course Description
In this class, we aim to understand the roots of the various ways we attend to persons in pain today, and so to develop greater conceptual clarity and historical perspective on the diverse frameworks in which we encounter persons in pain. At the same time, we seek to nurture a recognition that attending to persons in pain threatens modes of control over that person's reality and our own. Therefore, in this class we seek to foster an understanding that attending to persons in pain today, whatever the setting, is a fragile and fraught enterprise that nevertheless continually calls for creative and faithful responses.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

ETHICS578S - Contemporary Theories of Democracy

Course Description
Seminar has three aims: (a) to introduce students to some important topics and approaches in contemporary democratic theory; (b) to investigate the ways in which these issues are related to broader discussions about the strengths and weaknesses of democracy and the rule of law; (c) to familiarize students with a range of strategies for justifying or criticizing political arrangements or policies. Topics include social justice, individual rights and community, representation, deliberation, the relationship between democratic decision-making and markets and the normative implications of moral, religious and ideological pluralism.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI578S THEORIES OF DEMOCRACY

General Education Curriculum Codes
(EI) Ethical Inquiry, (SS) Social Sciences

ETHICS590 - Special Topics in Ethics

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ETHICS590S - Special Topics in Ethics

Course Description
Topics vary.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ETHICS646S - Strategic Storytelling: Narratives for Development

Course Description
With a broad array of storytelling mediums, we ask how 'sticky' stories told about poverty or development strategically can add to our ability properly to understand poverty and to conduct appropriate development policies more effectively. What are the benefits and limitations of considering public policy problems by entering through the arts of storytelling and of storylistening? How do stories help readers/listeners become alive to ethical and cultural considerations previously unseen or unheard? How might these stories enable storytellers to tell stories on their own terms, opening up new and critically important terrains for public policy? Soft power strategy. Guest practitioners.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL646S STRATEGIC STORYTELLING, ICS646S STRATEGIC STORYTELLING

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (SS) Social Sciences

ETHICS765S - Prison Pedagogy

Course Description
Prepares graduate students to teach in a prison setting. Familiarizes students with the logistical and ethical requirements of teaching in prison. Provides an introduction to pedagogical theory, the criminal justice system, and the intersection between the two. Asks students to think critically to tailor teaching methods and goals for this population, providing hands-on teaching skills that will be useful in any setting.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

ETHICS795 - Preventing Sexual Misconduct on University Campuses

Course Description
This Bass Connections project's goals are to summarize the problems and practices in sexual harassment intervention and training by conducting a review of the literature; examine the potential role of courage and self-awareness, as well as the ways these characteristics could be developed in individuals and incorporated into interventions; and to develop designs that utilize these insights. For graduate students, regular participation will be complimented with mentorship of undergrads, additional meetings with faculty, and summary presentations of research findings to the larger group. They will also be evaluated on the basis of the quality of their research based on their year and program. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ETHICS796 - Moral Economy of Markets: Constituting and Resisting Relations of Power

Course Description
This Bass Connections project will explore experiences and narratives especially of those thrown into various states of vulnerability, objectification and precarity by the voracious spread of market logic. For graduate students, regular participation in all project meetings will be complimented with mentorship of undergraduates, additional meetings with the faculty directors of the project, and summary presentations of research findings to the larger project group. They will also be evaluated on the basis of the quality of their research based on their year (1st year vs. 4th year) and program i.e. whether they are PhD or master's level. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ETHICS797S - Designing Ethics: Exploring the Integration of Ethics into Engineering Curricula

Course Description
Many engineering challenges contain thorny moral questions, yet ethical considerations are often secondary. In fact, nationwide ethics is rarely addressed in standard engineering disciplinary courses at Duke or elsewhere. This course seeks provide a blueprint and testing ground for addressing this gap. Students will work to research best practices from the educational and private sectors. Incorporating those insights with a study of the landscape of Engineering design education at Duke, students will design interventions that may be deployed in Duke Engineering classes. Graduate students will take a leadership role in the classroom and on projects. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ETHICS890S - Special Topics in Ethics

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

ETHICS893 - Research Independent Study

Course Description
Individual research in field of special interest under the supervision of a faculty member, the central goal of which is a substantive paper or written report containing significant analysis and interpretation of a previously approved topic. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ETHICS947S - Comparative Religious Studies (Case Study of Judaism, Christianity & Islam)

Course Description

The course offers a general framework and methodology of comparative religious studies. It is a case study of Judaism, Christianity, and Islam. The key elements of discussions are: faith, belief and theological continuity in the pre-modern era; Scriptures of the Hebrew Bible, Old and New Testament, and the Qur'an; God's essence, attributes and deeds; monotheism and Trinity; free will and predestination; creation and original sin; prophets and biblical figures; ethical orientation toward life; reason and revelation; and eschatology: life and death, end time, afterlife, salvation.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

RELIGION947S COMPARATIVE RELIGIOUS STUDIES

EVANTH518S - Humans on the move: evolutionary perspectives on prehistoric human migration

Course Description

With over seven billion people, humans currently dominate almost all corners of the globe. Indeed human relatives have been making large-scale migrations for almost two million years with important cultural and biological consequences for our species. Each week will cover a theme related to the causes and consequence of human migrations. The focus will be on biological, environmental, and cultural drivers of human migration, as well as the impact of migration events on human populations. This is a capstone course in EvAnth, suggested for seniors with multiple previous EvAnth courses or graduate students.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

EVANTH520S - Reconstructing the Past: The Paleobiology and Paleoecology of Primates

Course Description

Interpretation of the paleobiology of extinct primates relies on indirect evidence linking morphology to particular attributes of a species' ecological niche—be it diet, mode of locomotion, body size, sensory ecology, social systems, etc. Reconstructions require understanding the functional attributes of the anatomical systems of living primates followed by an inference by analogy about the behavior of the extinct ones. We examine similarities and differences in the primates living on different continents through time as well as contested paleoecological scenarios related to primate origins and ape and human origins. Recommended prerequisite: 200-300 level course in paleontology, anatomy, or ecology.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences

EVANTH522 - The Hominin Fossil Record

Course Description
Rigorous review of the fossil record of hominin evolution from the late Miocene to the end of the Pleistocene. Using primary literature and casts of key fossil specimens, students explore current controversies in the field of paleoanthropology. Prerequisite: Evolutionary Anthropology 101 and 220, or consent of instructor. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences

EVANTH530 - Human Functional Anatomy

Course Description
Basics of functional morphology (including elementary biomechanics), an overview of connective tissue structure and mechanics, and a systematic overview (from head to toe) of human anatomy from a functional perspective. Emphasis on connective and other tissues involved in functioning of the musculoskeletal system (primarily bone, cartilage, tendons, ligaments, and muscle). Prerequisite: Evolutionary Anthropology 101 and 333L or 334L.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

EVANTH537S - Orthopedic Biomechanics and Kinesiology

Course Description
Seminar discussions and research addressing fundamental theoretical and practical aspects of clinical biomechanics of the human musculoskeletal system. Readings from primary literature will be assessed in class along with proposals for future research. Students will select a research question, develop an appropriate data collection protocol and collect preliminary data, the results of which are presented to the class as part of a formal poster presentation. Recommended prerequisites: Evolutionary Anthropology 101, Physics 141L and 200 or 300-level anatomy course.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

EVANTH546S - Primate Social Evolution

Course Description
Ecological determinants of and biological constraints on social strategies and systems, with an emphasis on primates. Prerequisite: Evolutionary Anthropology 101 and 200- or 300-level behavior course.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences

EVANTH561S - Evolution, Cognition, and Society

Course Description
Using primary literature in evolutionary anthropology and cognitive science to discuss major societal events, behaviors, and issues. Topics include sex, prejudice, religion, music, abortion, illness, sexuality, global health, death, politics, economics and drugs. Emphasis on biological and cognitive perspectives to solving today's biggest personal, local and global problems. Topics will change each semester; course can be taken more than once. Prerequisite: at least one course in behavior, ecology, or cognition at the 200+ level.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY561S EVOL COGNITION & SOCIETY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

EVANTH570S - Energetics in Human Evolution, Ecology, and Health

Course Description
Examine the role of energy expenditure in human evolution and ecology, including: 1) growth, reproduction, and aging, 2) metabolically costly organs such as the brain, and 3) daily physical activity. Discuss methods for measuring energy expenditure. Investigate the effects of diet and exercise on daily energy expenditure in humans. Discuss the role of energy expenditure in modern cardiometabolic disease (e.g., obesity, heart disease, and diabetes). Students will complete and present an independent research project on a topic related to the course. Recommended prerequisite: Evolutionary Anthropology 330, Biology 329D/L, or Biology 321.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences

EVANTH580S - Ethics in Evolutionary Anthropology

Course Description
Ethical issues and controversies in the study of evolutionary anthropology including treatment of primates in research; appropriate use of human genetic data, skeletal remains, and fossils. Professional ethics will also be addressed (e.g., ethical behavior in grant and paper reviewing, plagiarism, intellectual property). Course will make use of films, interviews and discussion primary and popular literature.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

EVANTH582S - Primate Adaptation

Course Description
A study of primate adaptation from an evolutionary perspective. Topics vary according to student interests but may include history and functional significance of locomotor and feeding adaptations, craniofacial morphology, sense organs, reproductive systems, and language in primates, including humans. Seminar format but depending on topic may include laboratory analysis of materials. Prerequisite: 200- or 300-level anatomy or morphology course.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences

EVANTH585 - Statistical Rethinking: Methods and Applications in Evolutionary Anthropology and Biology

Course Description
Application of modern statistical methods in evolutionary anthropology and biology, including their theoretical foundations and application to phylogenetics, comparative methods, morphometrics, etc. The goal is to move from the limitations of frequentist statistical tests (i.e., p-values) and toward a richer assessment of scientific hypotheses, including Bayesian approaches. We will use a flipped classroom to provide hands-on team-based learning in R. Recommended prerequisite: 200- or 300-level Evolutionary Anthropology or Biology course and introductory statistics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

EVANTH588S - Macroevolution

Course Description
Evolutionary patterns and processes at and above the species level; species concepts, speciation, diversification, extinction, ontogeny and phylogeny, rates of evolution, and alternative explanations for adaptation and evolutionary trends. Recommended prerequisite: Biology 202L, 203L, or equivalent. Also recommended: one course in plant or animal diversity.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY588S MACROEVOLUTION

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

EVANTH590LS - Special Topics Laboratory

Course Description
Special topics in methodology, theory, or area. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

EVANTH590S - Special Topics

Course Description
Special topics in methodology, theory, or area. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EVANTH652S - The Life and Work of Darwin

Course Description
Readings by and about Darwin and his contemporaries, especially Wallace. Darwin's 'Autobiography' and Janet Browne's biography as context for readings of some of his major works and works of his contemporaries. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY652S THE LIFE AND WORK OF DARWIN

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

EVANTH701S - Concepts in Evolutionary Anthropology -A

Course Description
Graduate seminar for first year graduate students covering the foundation principles of evolutionary anthropology.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EVANTH702S - Concepts in Evolutionary Anthropology

Course Description
Introduction to topics that are considered central to Evolutionary Anthropology; Exposure to research and techniques used in the field; Develop skills in scientific inquiry, oral expression, and presentation; Familiarize students with the facilities/resources on campus that are associated with Evolutionary Anthropology. Consent Required. Part 2 of 2.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

EVANTH705 - Succeeding in Graduate School in the Biological Sciences

Course Description
Weekly lecture presentation on choosing a thesis advisor, the grant proposal and scientific manuscript peer review processes, and other topics related to succeeding in graduate school.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

Crosslisted Courses
BIOLOGY701 GRADUATE SCHOOL 101, UPGEN711 GRADUATE SCHOOL 101

EVANTH706 - Succeeding Beyond Grad School: Career Options with a PhD in the Biological Sciences

Course Description
Weekly lecture presentation on preparing academic job applications, alternative careers in the biological sciences and other topics related to succeeding beyond graduate school.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

Crosslisted Courses
BIOLOGY702 SUCCEEDING BEYOND GRAD SCHOOL, UPGEN712 SUCCEEDING BEYOND GRAD SCHOOL

EVANTH718 - Methods in Human Evolutionary Genetics

Course Description

An evolutionary perspective on human genetics and genomics, with an emphasis on current models and inference methods using medically important examples. The mechanisms of evolution shaping human genetic variation, as well as inference of evolutionary processes from genetic data. Topics include: population differences in disease risk; adaptation to local environments and pathogens; identifying regions of the genome underlying traits; models of neutral variation, migration, and genetic ancestry. Computational and quantitative skills will be emphasized throughout. Recommended prerequisite: Evolutionary Anthropology 101D, Biology 202, or equivalent; some probability and programming background helpful but not required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EVANTH730 - Gross Human Anatomy

Course Description

Includes complete dissection of a cadaver; laboratory work is supplemented by conferences which emphasize biological and evolutionary aspects. Required of entering graduate students in anatomy; by arrangement, may extend into second semester. Prerequisites: adequate background in biology, including comparative anatomy and embryology and written consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

EVANTH732 - Food Web Theory

Course Description

This class covers the fundamentals of Food Web Theory and their connections to modern takes on the discipline while also having a component of mathematical modeling, coding (in R and Mathematica), paper discussions, and visits from prominent Food Web Ecologists.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY732 FOOD WEB THEORY, ENVIRON743 FOOD WEB THEORY, UPE732 FOOD WEB THEORY

EVANTH735S - Functional Morphology of the Hominid Fossil Record

Course Description

Evolutionary and functional morphology of the hominini; emphasizing species in the genera Australopithecus, Paranthropus and Homo. Focus on biomechanical studies of 1) the masticatory apparatus as it relates to evolutionary shifts in diet, 2) upper limb function as it relates to the evolution of manipulative capabilities in the context of tool use, and 3) pelvic and lower limb morphology as it relates to the emergence of bipedal locomotion and changes in brain size and life history.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

EVANTH736L - Human Osteology

Course Description
An introduction to the basics of human osteological analysis. Identification and siding of all the bones of the human body and the major osteological landmarks on each bone; basics of bone histology, development and growth; and fundamentals of anthropological analysis of human skeletal remains (archeological treatment of burials; determination of gender, populational affinities, stature; paleopathological analysis; medicolegal applications). Graduate participants are required to do an additional topic review in an areas approved by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

EVANTH741 - Ecological Perspectives: Evolution to Ecosystems

Course Description
This course surveys core concepts in evolutionary and ecosystems ecology, and it challenges students to develop intersections and creative syntheses across those disciplines.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BIOLOGY841 EVOLUTION TO ECOSYSTEMS, UPE701 EVOLUTION TO ECOSYSTEMS, ENVIRON841 EVOLUTION TO ECOSYSTEMS

EVANTH742 - Ecological Perspectives: Individuals to Communities

Course Description
This course surveys core concepts in Physiological/Behavioral/Population Ecology and Community Ecology, and it challenges students to develop intersections and creative syntheses across those disciplines.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BIOLOGY842 INDIVIDUALS TO COMMUNITIES, UPE702 INDIVIDUALS TO COMMUNITIES, ENVIRON842 INDIVIDUALS TO COMMUNITIES

EVANTH743S - Ecology Seminar

Course Description
Presentation of current research by invited speakers, faculty, and students in the University Graduate Program in Ecology.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
UPE703S ECOLOGY SEMINAR, BIOLOGY711S ECOLOGY SEMINAR, ENVIRON702S ECOLOGY SEMINAR

EVANTH744L - Primate Field Biology

Course Description
Survey of field methods used to document primate behavior. Laboratory includes observations of free-ranging and captive primates at the Duke Lemur Center. Techniques covered include scan, focal animal and all occurrences sampling. Focus on the scientific process, including data analysis and writing of formal research papers. Graduate students will create their own research questions and may use projects as pilots for their thesis research. This course is paired with Evolutionary Anthropology 344L. Recommended prerequisite: previous coursework in evolution, animal behavior and/or ecology.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

EVANTH745 - Primate Sexuality

Course Description
A comparative and integrative study of primate sex and reproduction. The material is presented in three sections: the first focuses on primate social organization, mating systems, and reproductive strategies; the second focuses on the endocrine system and behavioral endocrinology, and; the third focuses on sexual differentiation of morphology, brain and behavior. In each section, this course places human sexuality within the broader context of the primate order. Graduate students are expected to write a term paper in addition to other class requirements.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

EVANTH760L - Medical Neuroscience and Clinical Human Neuroanatomy

Course Description
Explore the structure, functional organization, and neurobiology of the human central nervous system, its integrative actions, and the impairments of sensation, action and cognition that accompany injury or disease. Features a variety of instructional methods, including hands-on examination and dissection of human brain specimens, asynchronous video tutorials, live seminars with clinical experts, patient-interviews, and cases studies. Employs team-based learning, with graduate students integrated into teams of first-year medical students for real-time problem-solving and discovery. Requires general knowledge of cell and molecular biology, mammalian physiology and anatomy.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
NEUROSCI760L MEDICAL NEUROSCIENCE, BME760L MEDICAL NEUROSCIENCE

EVANTH785 - Human Health in Evolutionary Perspective

Course Description
Covers evolutionary approaches to understand human health at a global scale. Integration of evolutionary thinking and medical science provides new insights to a wide array of medical issues including obesity, cancer, allergies, and mental illness. Evolutionary perspectives reveal why some pathogens are more harmful than others, shed light on the origins and spread of infectious diseases in humans, and help in controlling antibiotic resistance. Graduate students will meet individually with the instructor and write a term paper.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

EVANTH790 - Topics in Physical Anthropology

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

EVANTH790S - Special Topics in Evolutionary Anthropology

Course Description
Selected topics in Evolutionary Anthropology. Topics vary by semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

EVANTH791 - Independent Study

Course Description
Directed reading and research. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

EVANTH793 - Research in Evolutionary Anthropology

Course Description
A preceptorial course in various research methods in biological anthropology and anatomy. Consent of instructor required. Credit to be arranged.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

FINTECH530 - Alternative Investments I

Course Description
The growth in alternative investments has been absolutely mind-boggling. Not so long ago, alternatives were seen as a source of returns with low correlation to the market at-large, this class of assets have, in many cases, come to reflect the market. This course is designed to provide a broad, foundational fluency on the topic of alternative investments. The objective is to provide students with the core understanding of the strategic drivers, the analytical wherewithal to perform key calculations, and the ability to connect the dots with what's going on in today's markets.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

FRENCH505P - When Fiction Meets History

Course Description
A preceptorial, in French, requiring concurrent enrollment in French 505S. Further information available from instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

FRENCH505S - When Fiction Meets History

Course Description
Investigation of key concepts along the fact/fiction & literature/history borders. Debate of their changing meanings, functions, and social significance in Francophone contexts during variety of periods, when fiction represents experimental thinking, and literature involves writing technologies. Focus on several topics: Cosmography or the Idea of the Universe, Human Passions or Love vs. Hatred, Human Relations: Dependence & Independence. Major writers/artists include Christine de Pizan, Héloïse, Abélard, Rousseau, Alain Chartier, Memmi, La Boétie, Sarraute. Work culminating in research or creative projects. Taught in English, with French preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST504S WHEN FICTION MEETS HISTORY, HISTORY505S WHEN FICTION MEETS HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, WR - (WR) Writing: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

FRENCH507S - Mimesis in Theory, Embodied Practice, and Literary Arts

Course Description
Theoretical exploration of mimesis from Plato and Aristotle to Tarde, Lacan, Girard, Rancière, Lacoue-Labarthe, Butler, Malabou, Cassin, and Latoo. Additional emphasis on mimesis in human and animal development and social/behavioral practice, with interdisciplinary intertexts from fields ranging from neuroscience to genomics. Frequent departures from paradigmatic and empirical evidence to revel in the sensory and intuitive renewal of literary/artistic mimetic agency and apperception. Course taught in French, with occasional sources in English. Flexible language of assignments and English discussion section for graduate students outside of the French field.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST509S MIMESIS IN THEORY AND PRACTICE, ENGLISH581S MIMESIS IN THEORY AND PRACTICE, LIT507S MIMESIS IN THEORY AND PRACTICE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

FRENCH510 - Citizen Godard

Course Description
This course explores the complex interactions of poetics and politics in the films of Jean-Luc Godard, from the French New Wave, through the experimental phase of the Dziga Vertov group, to the recent Histoire(s) du cinéma and Film socialisme. Drawing on a wide range of literary and philosophical texts (Merleau-Ponty, Althusser, Deleuze, Rancière), this seminar situates Godard's work within its intellectual and political contexts, investigating how developments in French culture and thought since 1950 have been reflected in - and sometimes anticipated by - Godard's films. In English with preceptorial available in French.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE642 CITIZEN GODARD, VMS552 CITIZEN GODARD, LIT510 CITIZEN GODARD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

FRENCH510P - Citizen Godard Preceptorial

Course Description
A preceptorial, in French, requiring concurrent enrollment in French 510. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

FRENCH515S - African and Caribbean Philosophy in French

Course Description
An introduction to Africana philosophy--philosophy of Africa and its diasporas--in French (with exceptions including Sylvia Wynter). How does the category of Africana philosophy translate to the Francophone global sphere and its histories, and to anglophone Africana philosophy? Decolonial philosophy; ethnophilosophy; Pan-Africanism; negritude; psychiatric and psychoanalytic interventions; philosophy and the construction and deconstruction of utopias; Africana thought in dialogue with continental, US, and indigenous traditions; Africana feminisms; interdisciplinary intertexts; and materially-situated philosophical paradigms, from the economic to the ecological. Course taught in French.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

FRENCH530S - Premodern Times: A User's Manual

Course Description
How has thinking with premodern cultures shaped criticism? Seminar explores aspects of medieval Euro-Mediterranean cultures as perennial objects of thought, investigating the ways the surviving writing and images mark key theoretical models. Inquiry proceeds by pairs of works. We debate a mode of thinking by examining critical essays with premodern works. Writers include Christine de Pizan, Alain Chartier, troubadour poets; critics such as Agamben, Boucheron, Memmi, Schlanger. Modes such as gender & sexuality; visual culture; political thought; multilingual poetics and practice. Works in translation; readings in original language and preceptorial meetings for majors/graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN642S PREMODERN TIMES, LIT541S PREMODERN TIMES, ROMST531S PREMODERN TIMES, ARTHIST532S PREMODERN TIMES, HISTORY508S PREMODERN TIMES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

FRENCH530SP - Premodern Times Preceptorial

Course Description
A preceptorial, in French, requiring concurrent enrollment in French 530S. Further information is available from the instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Occasionally

Units

Min Units:
0

Max Units:
0

FRENCH557 - Cultural Memory

Course Description

Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY557 CULTURAL MEMORY, LIT557 CULTURAL MEMORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

FRENCH557P - Cultural Memory Preceptorial

Course Description

A preceptorial, in French, requiring concurrent enrollment in French 557. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Occasionally

Units

Min Units:
0

Max Units:
0

FRENCH570S - Philosophy in Motion: Corporeality, Gesture, and Movement in Modern Thought

Course Description

In an age where the circulation of knowledge across media is paramount, what role can be ascribed to the mobile body? This seminar will investigate the central role played by the body, movement, and gesture in modern French, Caribbean, and African philosophy. We will examine their relation to questions of aesthetics and politics, as well as theories of community and practices of resistance. We will explore the body as an epistemological interface producing, encoding, and transmitting knowledge. We will also work interdisciplinarily in the fields of cinema and performing arts, addressing each as forms of intelligibility in motion. Taught in English with an optional preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS570S PHILOSOPHY IN MOTION, CULANTH571S PHILOSOPHY IN MOTION, DANCE571S PHILOSOPHY IN MOTION, LIT570S PHILOSOPHY IN MOTION, ROMST570S PHILOSOPHY IN MOTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

FRENCH570SP - Philosophy in Motion: Corporeality and Movement in Modern Thought Preceptorial

Course Description

A preceptorial in French, requiring concurrent enrollment in French 570S. Enrollment allows the course to count toward the language requirement for the French major or minor. Further information available from instructor.

Grading Basis

No Grade Associated

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

1

FRENCH571S - Introduction to Contemporary African Philosophy

Course Description

The objective of this course is to provide a critical overview of contemporary African thought as expressed in philosophical discourse, social sciences, literature and the humanities. The course will explore the questions raised by contemporary thinkers from the African continent and its diasporas, by raising the stakes of a philosophizing in and about Africa, starting from Africa and its diasporas. We will examine the extent to which these thoughts shed light on the political, cultural and civilizational problems of Africa and the contemporary world. Taught in French.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AAAS571S CONTEMP. AFRICAN PHILOSOPHY, LIT573S CONTEMP. AFRICAN PHILOSOPHY

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

FRENCH590 - Special Topics in French Literature

Course Description

A cross-cultural analysis focusing on specific literary or cultural French or Francophone topics to be announced.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

FRENCH590S - Seminar in French Literature

Course Description

Cross-cultural analysis of literary and cultural topics focusing on specific objects of inquiry. May be repeated.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:
3

Max Units:
3

FRENCH611 - Biography, Life Writing, Autofiction

Course Description
History and art of the life story, examining biography as it drives research and contemporary writing. From Montaigne to Rousseau, the biopic to the lives of troubadours, we will study modes, media and social functions: portrait, caricature, meditation, fragments, selfies. The subjects: famous or anonymous people; those who are not human, landscapes, the sea—even inanimate objects. The accounts of radical change or metamorphosis, personal epiphanies, self-conscious reflection. The aims of depicting lives as they unfold. Texts include Foucault, Augustine, Flora Tristan, Pascal, Ferraoun. Critical readings will be coupled with creative work culminating in a research project around your life. Same course as French 411 but with additional graduate-level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY611 BIO, LIFE WRITING, AUTOFICTION, LIT609 BIO, LIFE WRITING, AUTOFICTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

FRENCH682S - Simone de Beauvoir

Course Description
An in-depth study of Beauvoir as a philosopher, novelist, memoirist and feminist theorist. Understanding Beauvoir as an existentialist intellectual in mid-century France.Emphasis on The Second Sex. Wide-ranging reading of Beauvoir's novels, non-fiction, and memoirs, both with relevant philosophers and theorists, such as Sartre, Merleau-Ponty, and with more recent feminist theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT682S SIMONE DE BEAUVOIR, PHIL682S SIMONE DE BEAUVOIR, GSF682S SIMONE DE BEAUVOIR

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

FRENCH713 - French and Francophone Literature

Course Description
Concentration on twentieth-century literature. Historical and theoretical approach. Varying topics such as Regionalism, Nationalism and Postcolonialism; the status of fiction in a totalitarian space; Transtextuality and Francophone Literature. Readings include literary and nonliterary texts by writers such as Aquin, Chamoiseau, Confiant, Chauvet, Faye, De Certeau, Depestre, Miron. Taught in French.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

FRENCH715 - Cultural Memory

Course Description
Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST715 CULTURAL MEMORY, HISTORY715 CULTURAL MEMORY, LIT715 CULTURAL MEMORY

FRENCH716 - France & Africa: A Case Study of Postcolonial Culture

Course Description
As a result of particular circumstances—France's colonial doctrine of 'assimilation,' its geopolitical tutelage of Francophone Africa during the Cold War, elite cooptation and connivance, the existence of a 'Franco-African state' (Jean-Pierre Dozon) well beyond formal independence and the emergence of a 'Black France' due to postcolonial migration—France and its former African colonies share a cultural repertoire that is both common ground and disputed territory. Students will engage this Franco-African culture through a variety of its manifestations (literature, music, cinema, sports) to address questions of hegemony and resistance, alienation and emancipation. Taught in French.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

FRENCH717S - Banlieues, Margins and Peripheries in French Contemporary Literature, Cinema, and Theory

Course Description
This seminar explores figurations of banlieues and peripheries in contemporary French literature and cinema, and how they are inherently intertwined with a deep renewal of realist aesthetics. We will study the recent tendency to approach margins as metonymic and conflicted geopolitical configurations, articulating issues of gender, class and race. We will examine a constellation of recent films and narratives that can be anticipatory and expressive of the French social discontent in all its complexity, from the banlieues riots to the yellow vest movement. Same as French 427S, with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT716S BANLIEUES & PERIPHERIES

FRENCH718S - Reading Contemporary Literature in French for the 'Choix Goncourt' Prize

Course Description
Why read literature today? And how do we talk about what we read? This seminar offers a unique opportunity to participate in the Choix Goncourt Prize in the U.S, and learn how to be a literary critic. Students will engage in dialogue with contemporary authors, acquire theoretical and critical literary tools, and learn the best practices of being part of a selecting literary committee. For those who want to deepen their knowledge of literature and culture, sharpen their critical spirit, and improve skills in reading and writing French. One student will be designated as delegate to attend the Prize ceremony in NYC at the Albertine bookshop. Same as French 428S, but with graduate level work.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

FRENCH790P - French Theory and Literature Special Topics

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

FRENCH790S - Topics in French Studies

Course Description
Topics vary.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

FRENCH791 - Special Readings

Course Description
Supervised independent study and reading. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

FRENCH690-2 - Topics in French Literature of the Modern Era

Course Description
Close study of a particular author, genre, or interpretive category of the twentieth century. May include issues such as authorship, translation, reception or critical theory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

FRENCH690S-2 - Topics in French Literature of the Modern Era

Course Description
Close study of a particular author, genre, or interpretive category of the 20th century. May include issues such as authorship, translation, reception or critical theory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

FRENCH790-3 - Topics in Modern/Contemporary French Literature

Course Description
Includes genres, authors, movements, and works.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GERMAN501 - German for Academic Research I

Course Description
Introduction to German for the purpose of developing reading and translation skills necessary for pursuing academic research. Assumes no prior knowledge of German. Foundations of German grammar and syntax; emphasis on vocabulary and translations. Selected readings in theory of translation and techniques. Not open for credit to undergraduate students who have taken Intermediate German (203, 204, 212, or equivalent). Does not count toward the major or minor, or toward the fulfillment of the Foreign Language Requirement.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GERMAN502 - German for Academic Research II

Course Description
Development and refinement of skills needed to read and translate intermediate to advanced academic German. Texts selected by instructor, with regular opportunities to work on materials related to individual fields/research topics. Selected readings in theory of translation and techniques. Prerequisite: German 501. Not open for credit to undergraduate students who have taken Intermediate German (203, 204, 212, or equivalent). Does not count toward the major or minor, or toward the fulfillment of the Foreign Language Requirement.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN512S - Theories of the Image: The Image in Walter Benjamin

Course Description
Returning to Walter Benjamin's Art Work essay and its various sources and revisions, this course will discuss recent engagements with Benjamin's work in cinema, photography, and visual and media studies and will attempt to understand the role and functions of the faculty he coins 'the mimetic' in modern culture. Readings will be drawn from the English translation of Benjamin's Selected Writings, volumes 1-4, and including his work on photography, history, surrealism and his reviews of writers such as Charles Baudelaire. Readings will also include some of Benjamin's own primary sources, such as the writings of Kracauer as well contemporary discussions of Benjamin's work in academic journals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT612S THEORIES OF THE IMAGE, ROMST612S THEORIES OF THE IMAGE, VMS612S THEORIES OF THE IMAGE, CULANTH500S THEORIES OF THE IMAGE, CINE612S THEORIES OF THE IMAGE

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

GERMAN535S - Comparative Modernisms

Course Description
This course investigates the debated term modernism. We will explore a wide range of critical works on periodization, avant-garde movements, irony, stream of consciousness, and other key terms, to examine several major literary works of modernism, including selections from Woolf, Rilke, Marinetti, Pirandello, Musil, Joyce, and Kafka. Each student will select a representative work from a national literary tradition to contextualize for the class and research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST532S COMPARATIVE MODERNISMS, ITALIAN532S COMPARATIVE MODERNISMS, LIT532S COMPARATIVE MODERNISMS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance

GERMAN565S - Art and the Holocaust: Architecture, Art, and Cultural Politics during the Nazi Period

Course Description

This course will analyze the history of the genocide of the European Jews, and its connection to antisemitic art and cultural policy during the Nazi period. With a sound understanding of the development of oppressive policies against the Jews, and looking at a variety of media (painting, architecture, film, photography, design), the course will explore the complicated relationship between developing racist policies and the world war as they impacted and were in turn influenced by artists. Examines not only artists involved in the Nazi state, but also those who resisted in exile or were its victims.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ARTHIST555S ART AND THE HOLOCAUST, JEWISHST555S ART AND THE HOLOCAUST, HISTORY531S ART AND THE HOLOCAUST, VMS525S ART AND THE HOLOCAUST

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GERMAN570 - Frankfurt School Critical Theory

Course Description

This course serves as an introduction to the 'Frankfurt School' and Critical Theory with particular emphasis upon rationality, social psychology, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward an understanding of the analyses they developed and consider their validity. All readings and discussions are in English.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PHIL572 FRANKFURT SCHOOL, POLSCI570 FRANKFURT SCHOOL, LIT575 FRANKFURT SCHOOL

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

GERMAN575S - Hegel's Political Philosophy

Course Description

Within context of Hegel's total philosophy, an examination of his understanding of phenomenology and the phenomenological basis of political institutions and his understanding of Greek and Christian political life. Selections from Phenomenology, Philosophy of History, and Philosophy of Right. Research paper required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

POLSCI676S HEGEL'S POL PHILOSOPHY, PHIL536S HEGEL'S POL PHILOSOPHY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, SS - (SS) Social Sciences

GERMAN576S - Nietzsche's Political Philosophy

Course Description
Study of the thinker who has, in different incarnations, been characterized as the prophet of nihilism, the destroyer of values, the father of fascism, and the spiritual source of postmodernism. An examination of his philosophy as a whole in order to come to terms with its significance for his thinking about politics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI577S NIETZSCHE'S POLIT PHILOS, PHIL537S NIETZSCHE'S POLIT PHILOS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

GERMAN590S - Special Topics in German Studies

Course Description
Special topics in German literature and cultural studies. Taught in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN690 - Special Topics in German Literature and Culture

Course Description
Topics vary by semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GERMAN690S - Special Topics in German Literature and Cultural Studies

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language

GERMAN691 - Independent Study

Course Description
Directed studies in a field of special interest, under the supervision of a faculty member. Consent of instructor and Director of Graduate Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN700S - Foreign Language Pedagogy: Theories and Practice

Course Description
Overview of current research in the fields of second language acquisition and foreign language pedagogy, and its implications for the teaching of the German language, literature, and culture at all levels. Readings and discussions on competing theories of language acquisition and learning, issues of cultural identity and difference, learner styles, and the teaching of language as culture; training in contemporary teaching techniques and approaches.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN701S - Introductory German for Grad Students in Engineering

Course Description
First-semester half-credit introductory language course. Hybrid course (mostly online, some in-person meetings). Practice in spoken and written German (speaking, listening, reading, writing). Introduction to German culture and society through authentic materials. Course is intended for students preparing to attend a graduate level summer engineering program in Germany.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1.5

Max Units:
1.5

GERMAN702S - Modern Jewish Thought

Course Description
The seminar offers a survey of key moments in modern Jewish thought. It deals with the challenges and opportunities that modernity presented Jewish existence, and how these were addressed by Jewish thinkers from Baruch Spinoza and Moses Mendelssohn to Emmanuel Levinas and feminist thinkers. We will discuss the relationships between continuity and break, transformation and renewal that features modern Jewish thought in relation to its medieval articulations as well as in relation to various philosophical and theological traditions, and investigate how Judaism and Jewishness are redefined by means of present-day conceptual frameworks.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION702S MODERN JEWISH THOUGHT, HISTORY705S MODERN JEWISH THOUGHT

GERMAN711S - Mapping Jewish Modernism

Course Description
Students research Jewish modernism through questions of geography and movement, pointing to the many places where modern Jewish art has been created and the experiences of migration, exile, dislocation, diaspora, and resettlement that shaped this work. We discuss the varieties of ways that different art forms, including literature, theater, music, art, film, architecture, and dance, can be mapped. We analyze mapping in terms of the movements of people (artists, authors, and directors), of objects (paintings, works, and films), and within the works themselves. The extensive work with the Rubenstein Library leads to projects that contribute to an exhibit in Perkins Library and a digital site.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST711S MAPPING JEWISH MODERNISM, JEWISHST711S MAPPING JEWISH MODERNISM, ITALIAN711S MAPPING JEWISH MODERNISM

GERMAN713S - Svevo and World Literature

Course Description
Italo Svevo wrote some of the most important modern Italian novels, like 'Zeno's Conscience.' Through considerations of Svevo with other writers such as Darwin, Freud, Kafka, Pirandello, Proust, Shakespeare, and Woolf this class examines Svevo in his various contexts, including Italian, Austrian, German, Jewish, Triestine, European, and Modernist to understand the strengths and weaknesses of classifications according to language, religious or cultural background, nation, education, and literary movement. Graduate students will develop their critical understanding of 'world literature' through work on secondary readings and write a final conference paper related to their research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN713S SVEVO AND WORLD LITERATURE, JEWISHST713S SVEVO AND WORLD LITERATURE, LIT713S SVEVO AND WORLD LITERATURE, ROMST713S SVEVO AND WORLD LITERATURE

GERMAN715 - Foundations in German Studies, 1750 to 1900

Course Description
Second part of a three-semester sequence offering students a comprehensive, text-based survey of German literary history. Relations between an established German literature and its competing cultural centers; literary conventions, popular culture, and nonliterary discourses (philosophical, religious, national, scientific), the construction of German, Austrian, and Swiss traditions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN716 - Foundations in German Studies, 1900 to the Present

Course Description
Third part of a three-semester sequence offering students a comprehensive, text-based survey of German literary history. Relations between an established German literature and its competing cultural centers; literary conventions, popular culture, and nonliterary discourses (philosophical, religious, national, scientific), the construction of German, Austrian, and Swiss traditions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN730S - A Cultural and Spatial Analysis of the Ghetto: Venice, Nazi Occupied Europe, Chicago

Course Description
This seminar explores the cultural and spatial history of the Ghetto. From its origins in Venice through the spread of ghettos in Nazi-occupied Europe to the segregation of African-American populations in Chicago, specific spaces have been designated as ghettos. This designation has had an impact on the social understanding of architectural form, but it has also generated many cultural responses in material culture, art, photography, film, and other media. The course will explore the cultural understanding of the ghetto with a specific emphasis on the Jewish ghettos in Nazi-occupied Europe but with a comparative look at Venice and Chicago.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST730S A CULTURAL ANALYSIS OF GHETTOS, JEWISHST730S A CULTURAL ANALYSIS OF GHETTOS, HISTORY730S A CULTURAL ANALYSIS OF GHETTOS

GERMAN731S - The Bauhaus: Architecture, Design, Politics

Course Description
This seminar analyzes the history of the Bauhaus, from its roots in Weimar Germany to its impact on framing post World War II international Modernism. It covers major scholarship on Modernism, architecture, and design as well as central questions of twentieth-century art and politics. Grounded in the foundation and activity of the school in Germany after World War I, the seminar will also cover the spread of Bauhaus ideas, faculty, and students internationally including in Japan, Turkey, the United States, and on both sides of the Cold War.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST731S THE BAUHAUS, VMS731S THE BAUHAUS

GERMAN735S - Introduction to Turkish-German Literature and Cinema

Course Description

In this course, we will study the emergence and development of Turkish culture in Germany. How do Turkish-German authors and filmmakers address the discourses on migration, Heimat, integration, intercultural dialogue, and multiculturalism? How do they engage with German history? What is the relevance of their works for the discourses on refugees today? Throughout the course, we will explore the intricate relations of aesthetics, political representation, and memory across a variety of genres and media and investigate the continuities and discontinuities between the labor migration in the 1960s and 70s and the current debates on migration in Germany. Readings in German.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN740S - East/West/Zion: Jewish Literary Modernism

Course Description

This course explores how Jewish authors in the first half of the twentieth century negotiated questions of space and place, tradition and modernity, language, nationality, religious practice, and politics. There will be a special focus on the role of Eastern Europe in the literary imagination of German-Jewish writers, and the use of modernist form and style. Authors may include Franz Kafka, Joseph Roth, Alfred Döblin, Arnold Zweig, Veza Canetti, Rose Ausländer, S.Y. Agnon, Dovid Bergelson, Isaac Babel, and Bruno Schulz. Discussions will take place in English. Most readings will be in German, with a few additional works in Hebrew, Yiddish, Russian, and Polish.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
JEWISHST740S JEWISH LITERARY MODERNISM, LIT730S JEWISH LITERARY MODERNISM, SES745S JEWISH LITERARY MODERNISM

GERMAN745S - Brutal Humanism in Postwar Austria: Bernhard, Jelinek, Haneke, Seidl

Course Description

This seminar focuses on four postwar Austrian writers and filmmakers whose work is often described as brutal, even excessively so. Yet behind the cruelty and violence stands an unflinching commitment to unmasking the vulnerability of human existence and the unrelenting search for dignity, meaning, and connection. We will spend approximately three weeks on each figure and read works of literary theory, film theory, cultural studies, and affect theory alongside fiction and film. Primary readings in German; secondary readings in German and English; discussions in English. Students without German reading knowledge may read the primary sources in translation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT745S BRUTAL HUMANISM, VMS745S BRUTAL HUMANISM

GERMAN750S - Gender and Aesthetic Theory

Course Description
This seminar asks about the historical role played by feminine figures—muses, maidens, mothers, lovers—in the construction of aesthetic epiphanies and metamorphoses. The notion of Woman as a conduit for inspiration has a long theological, philosophical and literary tradition, beginning with the early Christian topos of the Virgin Mary as an 'aquaduct of grace.' We will interrogate this topos in search of a different and deeper understanding of what it has meant, historically, to be transformed by a work of art. Authors to be explored include Dante, Rousseau, Goethe, Schopenhauer, Wagner, Bachmann, Lacan, Irigaray, Kristeva, Kittler, and Latour. Discussions and readings in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT750S THE ETERNAL FEMININE, GSF750S THE ETERNAL FEMININE, ROMST750S THE ETERNAL FEMININE

GERMAN760S - The Concept of the Symbol

Course Description
There is widespread agreement that symbols are crucial for our understanding of ourselves as humans and as humanists, but there is little agreement about what symbols actually are. This question has acquired new urgency with the development of technologies that allow computers to freely yet mechanically generate symbolic strings. The course provides an introduction to the various concepts of the symbol—from the Eucharist to French and Russian symbolism, from German and English Romanticism to the invention of semiotics, from symbolic logic to the Lacanian symbolic order—that have historically underpinned our western relationships to aesthetic practice and technological innovation.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT752S THE CONCEPT OF THE SYMBOL, ROMST760S THE CONCEPT OF THE SYMBOL

GERMAN791 - Independent Study

Course Description
Directed reading in a field of special interest, under the supervision of a faculty member. Consent of the instructor and the director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GERMAN820 - Consent: Sex and Governance in the Age of Revolution

Course Description
An exploration of the rise of the notion of consent in the 18th century. Consent came to serve as the foundation of legitimacy and ethics within both political and conjugal unions, yet women's agency with regard to consent remained ambiguous in both cases, entwining discourses on rape and disenfranchisement with political theory. Seminar will focus on constructions of will, desire, reason, autonomy, and political voice in theory and literature from around 1800, juxtaposed with more recent theory. Particular attention paid to the reciprocal authorization between political theory and emerging field of biology. Will engage with current debate on the definition of consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF820 CONSENT

GERMAN890S - Special Topics in German Studies and Related Fields

Course Description
Advanced graduate seminar in topics related to German literature, culture, film, philosophy, music, and art. For graduate students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN995S - Grad Dissertation Colloquium

Course Description
The course will probe the complexities of advanced research from several perspectives: the opening up or extension of a specific scholarly field; the articulation of results in a broad professional context, including publication; the translation of personal explorations into pedagogical assets. GS students will present dissertation chapters; GS faculty will give guest talks surveying their own work, its interdisciplinary implications and the goal of synthesizing research and teaching.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

GERMAN790-1 - Topics in Literary Theory

Course Description
Literary theories and methods in their history and philosophical contexts. Issues include canonicity, German identity debates, and the claims of aesthetic language.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GERMAN790-2 - Topics in Literary History (Special Topics)

Course Description
Relations between an established German literature and its competing cultural centers; classical and popular cultures, literary conventions, and nonliterary discourses (religious, national, scientific), the construction of Austrian and Swiss traditions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GERMAN790-4 - Special Topics in German Thought

Course Description
Special topics in German thought. Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GLHLTH531 - Cost-Benefit Analysis for Health and Environmental Policy

Course Description
Course considers the importance of economic analysis, or cost-benefit analysis (CBA), for public policy assessments. Specific focus is on health and environmental policy, and the steps in identification / cataloguing, quantification, and monetization of impacts of potential policies and projects. Covers: Economic rationale for CBA; Basic principles for assessing the economic effects of projects; Techniques for valuing health and environmental impacts; Intergenerational/philosophical concerns related to CBA; Social discounting; Risk and uncertainty; Comparisons of CBA with other approaches (i.e. cost effectiveness analysis, multi-objective analysis).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL607 COST-BENEFIT ANALYSIS/HLTH&ENV, ENVIRON563 COST-BENEFIT ANALYSIS/HLTH&ENV

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

GLHLTH534 - Water Quality Health

Course Description
Explore basic concepts of water quality and human health with focus on the global water cycle, global water demand and availability, chemical properties of water, contaminants in water, health implications, and environmental isotope hydrology. Highlights relationships between human activities, water scarcity, water quality degradation, and ecological and health consequences. Addresses some policy implications related to conflicts over water resources and impact of energy production on water resources. Prerequisites: prior knowledge of introductory calculus and chemistry or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON524 WATER QUALITY HEALTH, ENERGY524 WATER QUALITY HEALTH, ECS524 WATER QUALITY HEALTH

GLHLTH538 - Global Environmental Health: Economics and Policy

Course Description
Social science perspective on global environmental health. Students will learn to identify primary environmental causes of high burden diseases such as malaria, diarrhea, and respiratory infections; describe how to measure socio-economic impacts of global environmental health diseases; discuss key policies to control global environmental health problems based on private prevention and therapeutic behaviors; and propose frameworks to empirically monitor and evaluate global environmental health policies. A sub-module will focus on climate change and water-borne diseases. Prerequisites: Introductory course in statistics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON538 ENVIRON HEALTH: ECON AND POLIC, PUBPOL582 ENVIRON HEALTH: ECON AND POLIC, HLTHPOL582 ENVIRON HEALTH: ECON AND POLIC

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

GLHLTH548S - Global History of Medicine

Course Description
The study of medicine as an object of critical analysis is a rapidly growing and exciting subfield in both history and anthropology. In English-language scholarship, the biggest conceptual leaps appear in works that analyze post-colonial spaces in Africa, Asia and the Americas, and engage with—and critique—the methodological and theoretical tools of postcolonialism, poststructuralism, governmentality, subaltern studies, Science and Technology Studies (STS), and sociology of scientific knowledge (SSK). We will read and discuss recent and renowned works.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY548S GLOBAL HISTORY OF MEDICINE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

GLHLTH562 - Data Science and Data Visualization with R

Course Description
This course introduces students to data science and data visualization in R. The core content of the course focuses on data acquisition and wrangling, exploratory data analysis, data visualization, inference, modeling, and effective communication of results. A key objective is to take students from zero to being able to work in a team on a fully reproducible data science project analyzing a dataset of their choice and answering questions they care about.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research, (QS) Quantitative Studies

GLHLTH569 - Understanding Sickle Cell Disease: A Biopsychosocial Approach

Course Description
This course provides students with an overview of sickle cell disease, including its genetics, epidemiology, pathophysiology, medical complications, psychosocial challenges, and health service utilization from a global perspective. Students will engage in an exploration of the role of discrimination and stigmatization as they affect people with sickle cell disease, as well as differences in how the disease is viewed and managed in various countries.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS569 SICKLE CELL DISEASE, NURSING569 SICKLE CELL DISEASE

GLHLTH571 - Global Maternal and Child Health

Course Description
Provides solid foundation in global perspectives on maternal and child health research, practice, and policy. Utilize case analysis to examine critical health challenges facing women, children, providers, and policymakers in some of the world's most vulnerable communities. Course designed for graduate and advanced undergraduate students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

GLHLTH571D - Global Maternal and Child Health

Course Description
Provides solid foundation in global perspectives on maternal and child health research, practice, and policy. Utilize case analysis to examine critical health challenges facing women, children, providers, and policymakers in some of the world's most vulnerable communities. Course designed for graduate and advanced undergraduate students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(SS) Social Sciences

GLHLTH571K - Introduction to Maternal and Child Health

Course Description
Provides global perspectives on maternal and child health research, practice, and policy. Utilizes case analysis to examine health challenges facing women, children, health providers, and policymakers in some of the world's most disadvantaged communities. Addresses maternal health, infant health, and early childhood development. Special focus on low- and middle-income countries. Discussion includes: data and measurement, health system challenges, public health interventions and programs, policy and advocacy. Topics include: reproductive health, delivery and postnatal care, nutrition, immunization. Designed for graduate and advanced undergraduate students. Taught at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (SS) Social Sciences

GLHLTH573D - One Health: From Philosophy to Practice

Course Description
Interdisciplinary course introducing construct of One Health as increasingly important to a holistic understanding of prevention of disease and maintenance of health. Includes discussion of bidirectional impact of animal health on human health, impact of earth's changing ecology on health. Learning objectives include 1) to describe how different disciplines contribute to the practice of One Health, 2) to creatively design interdisciplinary interventions to improve Global Health using a One Health model. Course will include weekly 2-hour multi-campus seminar off-site at NC Biotechnology Center with on-campus discussion section using case studies to supplement the seminar.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

GLHLTH581 - Global Environmental Health Problems: Principles and Case Studies

Course Description
Many environmental problems occur both locally & globally. Having insights and experience from different parts of the world is important for students to gain problem-oriented training. This course will cover fundamental principles on physical & chemical processes related to major environmental problems. These principles will then be integrated to discussions of case studies addressing a specific set of problems. The case studies will involve the participation of invited guest instructors who are experts on specific topics/cases. Depending on preference of guest instructors, they can introduce a case study via online lecturing/chatting or providing a pre-made video. Online course. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON581 GLOBAL ENVIRONMENTAL HEALTH

General Education Curriculum Codes
(NS) Natural Sciences, (SS) Social Sciences

GLHLTH581D - Global Environmental Health Problems: Principles and Case Studies

Course Description

Many environmental problems occur both locally & globally. Having insights and experience from different parts of the world is important for students to gain problem-oriented training. This course will cover fundamental principles on physical & chemical processes related to major environmental problems. These principles will then be integrated to discussions of case studies addressing a specific set of problems. The case studies will involve the participation of invited guest instructors who are experts on specific topics/cases. Depending on preference of guest instructors, they can introduce a case study via online lecturing/chatting or providing a pre-made video. Online course. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ENVIRON581D GLOBAL ENVIRONMENTAL HEALTH

General Education Curriculum Codes

(NS) Natural Sciences, (SS) Social Sciences

GLHLTH581K - Global Environmental Health Problems: Principles and Case Studies

Course Description

Many environmental problems occur both locally & globally. Having insights and experience from different parts of the world is important for students to gain problem-oriented training. This course will cover fundamental principles on physical & chemical processes related to major environmental problems. These principles will then be integrated to discussions of case studies addressing a specific set of problems. The case studies will involve the participation of invited guest instructors who are experts on specific topics/cases. Depending on preference of guest instructors, they can introduce a case study via online lecturing/chatting or providing a pre-made video. Online course. Open to Duke Kunshan students only. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ENVIRON581K GLOBAL ENVIRONMENTAL HEALTH

General Education Curriculum Codes

(NS) Natural Sciences, (SS) Social Sciences

GLHLTH590 - Special Topics in Global Health

Course Description

Topics vary depending on semester and section. Topics may include: global health ethics, field methods, health technologies, rapid needs assessment, and global health policies.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

GLHLTH590S - Special Topics in Global Health

Course Description
Topics vary depending on semester and section. Topics may include: global health ethics, field methods, health technologies, rapid needs assessment, and global health policies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GLHLTH593 - Research Independent Study in Global Health

Course Description
Individual research-oriented directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in a significant academic product. Open only to qualified juniors and seniors by consent of instructor and director of undergraduate studies in global health.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

GLHLTH605 - Air Quality Management: Linking Science to Policy

Course Description
Air quality management topics are discussed: the policy foundation and varied approaches used to address criteria air pollutants, air toxics, mobile sources and acid deposition. Management principles are based on science-backed policies. The course covers concepts and methods in atmospheric science, exposure science and health sciences that are used to support policy and management decisions. Relevant science is introduced to understand how air pollutants are generated, how individuals and populations are exposed to air pollution, how air pollution exposure affects health in the general and vulnerable populations and how air pollution and climate change interact in affecting human health.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON605 AIR QUALITY MGMT: SCI & POLICY

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

GLHLTH637S - Population and Environmental Dynamics Influencing Health

Course Description
Course examines population, health and environment (PHE) dynamics with focus on interactions in developing or transition economies. Theoretical and empirical approaches governing PHE dynamics from multidisciplinary perspectives, including geography, public health /epidemiology, demography, and economics. Students will obtain experience in design and analysis of PHE studies, and epidemiology of vector-born, chronic and enteric infections.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON637S POP/ENVR DYNAMICS & HEALTH

General Education Curriculum Codes
(NS) Natural Sciences, (SS) Social Sciences

GLHLTH641 - Non-Communicable Diseases in Low- & Middle-Income Countries: Trends, Causes and Prevention Strategy

Course Description
Course will provide an overview of the recent (mid-20th century to the present) trends in non-communicable disease epidemiology. Focus on four major non-communicable disease categories as separate modules: cardiovascular, oncologic, diabetic and pulmonary diseases. Case studies used to highlight selected geographic differences. By using lectures, assigned readings and classroom discussion the course aims to provide the student with a firm understanding of the shifting disease burden and the landscape of stakeholders and interventions to prevent the same.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences, (SS) Social Sciences

GLHLTH641K - Non-Communicable Diseases in Low and Middle Income Countries: Trends, Causes, Prevention Strategies

Course Description
Provides global overview of recent (mid-20th century to present) trends in non-communicable disease (NCD) epidemiology and strategies for prevention and control of these diseases, with particular emphasis on China and comparisons between China and other countries. Focuses on four major NCD categories as separate modules: cardiovascular, diabetic, oncologic, and pulmonary diseases. Uses case studies to highlight selected geographic differences. Provides firm understanding of shifting disease burden, stakeholders, and interventions to address NCDs in low- and middle-income countries. Designed for graduate-level students, open to advanced undergraduates. Taught at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

GLHLTH660 - Global Mental Health

Course Description
Examination of global mental health from perspectives of culture, public health, epidemiology, human rights, policy, and intervention. Disciplines include cross-cultural psychiatry, medical anthropology, public mental health, and economics. Topics include ethics, stigma, cross-cultural classification of mental health, ethnopsychology, trauma, violence, disasters, and displacement. Populations include children, ethnic minorities, refugees, survivors of complex emergencies, and persons with chronic disease. Course highlights mixed-methods approaches to research and intervention evaluation. Designed for graduate students & advanced undergraduates. Prior research methods course recommended.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY611 GLOBAL MENTAL HEALTH, CULANTH611 GLOBAL MENTAL HEALTH, RIGHTS660 GLOBAL MENTAL HEALTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, NS - (NS) Natural Sciences

GLHLTH660K - Global Mental Health (A)

Course Description
Examination of global mental health from perspectives of culture, public health, epidemiology, human rights, policy, and intervention. Disciplines include cross-cultural psychiatry, medical anthropology, public mental health, and economics. Topics include ethics, stigma, cross-cultural classification of mental health, ethnopsychology, trauma, violence, disasters, and displacement. Populations include children, ethnic minorities, refugees, survivors of complex emergencies, and persons with chronic disease. Course highlights mixed-methods approaches to research and intervention evaluation. Designed for graduate students & advanced undergraduates. Prior research methods course recommended. Taught in Durham.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

GLHLTH672 - Health in the African Diaspora

Course Description
Exposes and explores the individual and joint contributions of biological and non-biological factors to health and wellbeing in peoples from various regions and countries of the African Diaspora. The course draws on a variety of disciplines, modes of inquiry, and health problems in comparative analyses of genetic, historical, political, and sociocultural dimensions of the African Diaspora. Course content is not limited to the transatlantic African Diaspora; it spans multiple African Diaspora streams.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS660 HEALTH IN THE AFRICAN DIASPORA, CULANTH660 HEALTH IN THE AFRICAN DIASPORA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

GLHLTH673D - Global Surgical Care

Course Description
Lack of access to surgical care threatens the health of people throughout the world's poorest regions, and impacts all areas of health care. This seminar will address issues surrounding the delivery of surgical and anesthesia care in low- and middle income countries for students and clinical trainees in global health. This course will focus on surgical care delivery and management; workforce, training, and education; and economics and finance. The content of this course will be based on the Lancet Commission on Global Surgery report and support materials. The format will be a weekly lecture, readings, and case studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (SS) Social Sciences

GLHLTH673S - Global Surgical Care

Course Description
Lack of access to surgical care threatens the health of people throughout the world's poorest regions, and impacts all areas of health care. This seminar will address issues surrounding the delivery of surgical and anesthesia care in low- and middle income countries for students and clinical trainees in global health. This course will focus on surgical care delivery and management; workforce, training, and education; and economics and finance. The content of this course will be based on the Lancet Commission on Global Surgery report and support materials. The format will be a weekly seminar, readings, and case studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

GLHLTH690 - Special Topics in Global Health Studies

Course Description
Topics vary depending on semester and section. Topics may include: global health ethics, field methods, health technologies, rapid needs assessment, and global health policies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

GLHLTH700 - Global Health Field Research: Planning and Skill Development

Course Description
Provides preparation for global health fieldwork for MSc Global Health students. Students will develop critical skills, knowledge, and reflective insights to manage the multiple aspects of fieldwork. Open only to first year students in MSc-GH program. Consent of Director of Graduate Studies required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0.5

Max Units:
1

GLHLTH700K - Global Health Field Research: Planning and Skill Development

Course Description
Prepare students to successfully engage in field-based research in global health. Develop critical skills and reflective insights that can help students to manage the multiple aspects of fieldwork. Taught in China at Duke Kunshan University.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

GLHLTH701 - Global Health Challenges

Course Description
Global Health Challenges surveys the major global health problems facing the world today. After providing a theoretical and conceptual framework for understanding these challenges within a biopsychosocial model, the course uses lecture and case discussion to analyze key areas contributing to the global burden of disease: infectious disease; communicable diseases; maternal, reproductive, and child health; and injury, violence, and disaster. Throughout the course, emphasis is placed on both understanding the complex interaction of upstream and downstream approaches to improve health outcomes and elucidating successful strategies in reducing health disparities. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH701D - Global Health Challenges

Course Description
Global Health Challenges surveys the major global health problems facing the world today. After providing a theoretical and conceptual framework for understanding these challenges within a biopsychosocial model, the course uses lecture and case discussion to analyze key areas contributing to the global burden of disease: infectious disease; communicable diseases; maternal, reproductive, and child health; and injury, violence, and disaster. Throughout the course, emphasis is placed on both understanding the complex interaction of upstream and downstream approaches to improve health outcomes and elucidating successful strategies in reducing health disparities. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH701K - Global Health Challenges

Course Description

Course introduces major global health problems and social, behavioral, economic, biomedical and environmental determinants of health in resource limited settings. Topics include communicable diseases i.e. HIV, malaria, tuberculosis and common childhood diseases; chronic diseases such as cancer, diabetes, cardiovascular disease and mental health; and determinants of health associated with these diseases, such as poverty, gender imbalance, culture, poor environmental sanitation, malnutrition, tobacco use, and climate change. Other topics may include health promotion, reproductive health, maternal and child health, and disaster preparedness. Taught at Duke Kunshan University.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

GLHLTH702 - Global Health Research: Design and Practice

Course Description

Course provides a foundation in study design, research question development, field implementation, measurement, validity and reliability. Quantitative and qualitative research approaches are examined. Students build critical skills in reading, interpreting and synthesizing scientific literature. The selection of appropriate measurements and survey development is emphasized and issues in field implementation explored.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

GLHLTH702D - Global Health Research: Design and Practice

Course Description

Course provides a foundation in study design, research question development, field implementation, measurement, validity and reliability. Quantitative and qualitative research approaches are examined. Students build critical skills in reading, interpreting and synthesizing scientific literature. The selection of appropriate measurements and survey development is emphasized and issues in field implementation explored.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

GLHLTH702K - Global Health Research: Design and Practice

Course Description

Course provides a foundation in study design, research question development, field implementation, measurement, validity and reliability. Quantitative and qualitative research approaches are examined. Students build critical skills in reading, interpreting and synthesizing scientific literature. The selection of appropriate measurements and survey development is emphasized and issues in field implementation explored. Taught at Duke Kunshan University.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

GLHLTH705 - Biostatistics and Epidemiology for GH Science I

Course Description

Introduces principles of epidemiology, including disease frequency measures; measures of association; observational, experimental, and quasi-experimental study designs; validity -- confounding, selection bias, measurement error; reliability. The course also will interweave introductory biostatistics for continuous and categorical variables. Lab section in which students walk through guided data analysis on provided data set using STATA.

Grading Basis

Graded

Units

Min Units:

4

Max Units:

4

GLHLTH705K - Biostatistics and Epidemiology for Global Health Science I

Course Description

Introduces principles of epidemiology, including disease frequency measures; measures of association; observational, experimental, and quasi-experimental study designs; validity—confounding, selection bias, measurement error; reliability. The course also will interweave introductory biostatistics for continuous and categorical variables. Lab section in which students walk through guided data analysis on provided data set using STATA. Taught at Duke Kunshan University.

Grading Basis

Graded

Units

Min Units:

4

Max Units:

4

GLHLTH707 - Biostatistics and Epidemiology for GH Science II

Course Description

Builds on Quantitative Methods I. Provides common understanding of regression including linear, logistic, and general linear regression, use and interpretation of dichotomous and continuous variables, indicator terms, and interaction terms, and regression diagnostics. Required lab section.

Grading Basis

Graded

Units

Min Units:

4

Max Units:

4

GLHLTH707K - Biostatistics and Epidemiology for Global Health Science II

Course Description

Modular course building on Quantitative Methods I. Required module provides common understanding of regression including linear, logistic, and general linear regression, use and interpretation of dichotomous and continuous variables, indicator terms, and interaction terms, and regression diagnostics. Required lab section. Taught at Duke Kunshan University.

Grading Basis

Graded

Units

Min Units:

4

Max Units:

4

GLHLTH709S - Science, Medicine, and the Body

Course Description

Introduces students to scholarship about the body's complex relations to science, technology and medicine. Examines how embodied knowledges and experiences of pain, disease, injury, and ability relate to forms of gender, sexuality, race, state power, coloniality, and capital. Explores these connections across debates in medical anthropology, science and technology studies, cultural theory, and the medical humanities, while paying close attention to different genres of writing.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CULANTH709S SCIENCE, MEDICINE, BODY, GSF709S SCIENCE, MEDICINE, BODY, SCISOC709S SCIENCE, MEDICINE, BODY, LIT709S SCIENCE, MEDICINE, BODY

GLHLTH710 - Intermediate Epidemiology

Course Description

This course covers in-depth topics in epidemiology with a focus on the global health context. The course textbook is 'Epidemiology: Beyond the Basic' by Moyses Szklo and Javier Nieto. The textbook will be supplemented with publications selected from the epidemiologic, clinical, nutritional and other literature. Topics covered include epidemiologic study designs, measures of disease occurrence and associations with risk factors, confounding and interaction, time to event data, and methods for causal inference. Course content will focus on epidemiologic concepts. Related statistical concepts will be discussed, but data analysis will not be a focus. Prior epidemiology coursework required. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

GLHLTH720 - Decolonizing Global Health

Course Description

Recent calls to decolonize global health reflect a growing awareness of the failure of global health to address persistent colonial/imperial attitudes, structural racism, and power asymmetries. Global health trainees, educators, and practitioners must interrogate their own colonial history, study theories of decolonization and indigenous activist movements, confront systemic/structural racism, and articulate transformative solutions. This course offers a brief, but wide-ranging, overview of some of the most critical questions shaping the Decolonize Global Health movement, and guides students to formulate actionable strategies to decolonize global health curriculum, research, and practice. Open only to Global Health master's students. Taught online.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

GLHLTH725K - Global Health and Migration

Course Description
GLHLTH 725K introduces topics at the intersection of global health and migration, including populations who experience forced migration and displacement. The course uses intersectional and interdisciplinary approaches and frameworks to examine health inequities among migrant populations and the determinants that drive those disparities. We will cover broad topics related to global health and migration including climate change, urbanization, infectious disease, mental health, and sexual, reproductive, and maternal health. Diverse case studies, lessons learned, and ethical public health approaches will be discussed to promote migrant health and protect the human rights of all migrants.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GLHLTH731 - One Health: Introduction to the One Health Approach

Course Description
6-day morning course introduces principles of employing the One Health approach in preventing and controlling infectious diseases. Includes practical overview of host factors, environmental factors, and microbiological factors that influence this dynamic field of study. Through lectures and exercises, introduces infectious disease surveillance, diagnostic tools, outbreak investigations, vaccine trials, public health interventions, biodefense, emerging infectious diseases and analytical approaches as they pertain to infectious disease prevention and control. Introduces wide array of reference material for practical application of course material.

Grading Basis
Graded

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
ENVIRON931 INTRO TO ONE HEALTH APPROACH

GLHLTH731K - One Health: Introduction to the One Health Approach

Course Description
Introduces principles of employing the One Health approach in preventing and controlling infectious diseases. Includes practical overview of host factors, environmental factors, and microbiological factors that influence this dynamic field of study. Through lectures and exercises, introduces infectious disease surveillance, diagnostic tools, outbreak investigations, vaccine trials, public health interventions, biodefense, emerging infectious diseases and analytical approaches as they pertain to infectious disease prevention and control. Introduces wide array of reference material for practical application of course material. Course offered in Durham for Duke Kunshan University students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

GLHLTH732 - One Health: Introduction to Environmental Health

Course Description
Course provides a comprehensive overview of major topic areas in Environmental Health. Includes major sources of environmental health risks, such as microbial, chemical, and physical agents in natural and anthropogenic environments. Also covers topics of toxicology and ecotoxicology, risk assessment and risk management, water and sanitation issues, infectious diseases, food safety, and other emerging topics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON932 INTRO TO ENVIRONMENTAL HEALTH

GLHLTH733 - Cost-Benefit Analysis (Part I): Theory & Practice

Course Description
Covers theory and practice of cost-benefit analysis (CBA), or economic analysis, as an important tool for conducting public policy assessments, with emphasis on environmental and health policy interventions. Covers topics such as the economic and ethical rationale for CBA, basic principles for assessing the economic effects of projects, intergenerational and philosophical concerns as they relate to CBA, social discounting, equity analysis and poverty weights, and risk and uncertainty. Recommended prerequisite: Intermediate/advanced microeconomics.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

Crosslisted Courses
PUBPOL733 COST-BENEFIT I: THEORY, ENVIRON758 COST-BENEFIT I: THEORY

GLHLTH734 - Cost-Benefit Analysis (Part II): Nonmarket Valuation

Course Description
Builds on Cost-Benefit Analysis Part I (GLHLTH 733), but can also be taken as a stand-alone module. Covers advanced topics in nonmarket valuation, including hedonic valuation, the travel cost method, stated preference methods, and averting expenditures or coping costs approaches. Emphasis is on environmental and health concepts and applications. Recommended prerequisite: Intermediate/advanced microeconomics; advanced econometrics.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

Crosslisted Courses
PUBPOL734 COST-BENEFIT II: VALUATION, ENVIRON746 COST-BENEFIT II: VALUATION

GLHLTH735K - One Health: Introduction to Entomology, Zoonotic Diseases, and Food Safety

Course Description
Course introduces public health students to entomology, zoonotic diseases, and principals of modern food safety. Includes methods for conducting studies of mosquitoes and ticks, controlling zoonotic diseases, and protecting the food supply. Special focus on modern food safety techniques in meat, dairy and produce production. Lectures complemented with considerable laboratory and/or field work. Course offered in Durham for Duke Kunshan University students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GLHLTH739K - One Health: Public Health Laboratory Techniques

Course Description
Introduction to common laboratory techniques used in emerging infectious respiratory disease research and surveillance laboratories; emphasis on techniques for culturing, characterization, and serological surveillance of exposure to influenza viruses. This course is offered in Durham for Duke Kunshan University students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

GLHLTH740 - Global Health Ethics in Research, Policy & Practice

Course Description
This course presents practical and theoretical approaches to more ethical global health research, policy, and practice. Students will reflect on their social locations and values systems while examining foundational, contemporary, and decolonial ethical frameworks related to global health. Utilizing diverse, interdisciplinary case studies, students will develop the skills to analyze power dynamics and ethical choices of global health actors and their impact on marginalized communities. This course has a strong emphasis on applied ethics, exploring topics like cultural humility and equitable community partnerships, with a practical focus on preparing students for more ethical summer fieldwork.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH740K - Ethics for Global Health Research

Course Description
Course presents overview of practical and theoretical approaches to bioethics from a range of perspectives, including humanities, law, philosophy, medicine and science. Students apply various resources, terminology and frameworks to case studies, preparing them for their own research. Course includes IRB and responsible conduct of research. Taught at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
2

Max Units:
2

GLHLTH750 - Health Systems in Low and Middle Income Countries

Course Description
Health systems in low and middle income countries are analyzed applying five dimensions: Stewardship and Client Interaction, Financing, Service Provision, Innovation and Entrepreneurship, Leadership and Ethics. Health systems are idiosyncratic to their history, economics, politics and geography. Comparisons can be made on financing, organization of care providers, client interaction/interface, access/quality/cost and outcomes such as health status of populations, preventative care and client satisfaction. 7-9 health systems are presented to demonstrate the framework. Student teams apply the framework to a selected country.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH750K - Health Systems in Developing Countries

Course Description
Course introduces key challenges faced in strengthening of health systems in low and middle income countries. Topics include: overview of organization of health systems, models of purchasing and providing health care, innovations in financing health care, issues in service delivery such as quality of care and human resource challenges, and frameworks and methods employed in the evaluation of health systems. Course will also draw attention to resource allocation problems and various frameworks used to address them. Readings primarily from health policy, economics and other social science journals. Taught at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH751 - Implementation Science in Global Health

Course Description
This course will teach the principles and tools of implementation science for global health research purposes. Through a collaborative process, students will learn the frameworks of implementation science, work with global and local partners to assist with 'real-life' implementation challenges, provide deliverables to external organizations, work within a fixed timeline and improve writing and presentation skills.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH751K - Developing Implementation/Operational Research for Improving Health Interventions

Course Description
IR/OR: studies how to improve uptake, implementation, and translation of research findings into routine and common practices; moves results from effectiveness studies and efficacy trials to real-world settings, obtaining information to guide scale-up; helps implementers apply lessons from a program in one context to developing a similar program in a similar environment. Course covers: framework of IR/OR; methods of identifying program implementation problems; how to organize and develop an IR/OR proposal; main study design, research methods, data collection and analysis used in IR/OR; approaches to capacity building for IR/OR in developing countries. Offered at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH752 - Grant Writing in Global Health: A Didactic Primer

Course Description
This master's level didactic course will teach students how to seek funding opportunities and create grant proposals for global health research purposes. Through an iterative process, students will learn how to plan a research proposal effectively, work within a fixed timeline, tips for improving writing skills, create a budget and budget justification, design a team-based study, and submit a grant proposal with global health faculty mock grant review for learning purposes.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH753 - Community Engaged Approaches To Population Health Improvement

Course Description
This course will introduce learners to the concept of community engagement (CE), examine the arguments and empirical evidence for its value, explain the variety of approaches to CE, introduce available resources (local, national, and international) that support the practice of CE, engage students with case studies (primarily international) that illustrate the practice of CE, and provide both didactic and experiential education in that practice. In addition to reading and discussion, students will contribute to an ongoing CE project and will be asked to reflect on the ways in which that project reflects what they are learning in class.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH755 - Global Health Policy: Transforming Evidence into Action

Course Description
In-depth inquiry on how to narrow the gap between global health evidence and practical action and policy making on the ground. Examination of the complex ways in which global health policies are formed, shaped, and implemented. How key actors in global health can be identified, and how their power and influence can be analyzed. The contextual factors and processes that affect policy making. Top-down, bottom-up and mixed approaches to actual implementation of global health policies. The relationship between researchers and policymakers. Theories, tools, and frameworks for becoming a 'policy entrepreneur,' able to bridge the research-to-policy divide. Case studies. Case-based competition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GLHLTH755K - Health Economics

Course Description
Develop economic understanding of how health care institutions and markets function. Includes discussion of theoretical and empirical findings pertaining to individuals' decisions about personal health and health care; decisions made by health services suppliers; and, government decision-making about resource allocation and policy in the health sector. Global scope. Draws heavily on applied microeconomics, designed for students with limited economics background. Organized sequentially beginning from individual and firm-level, then shifting to market-level, and finally macroeconomic-level which views the economy as a whole and examines role of health and health care within the macroeconomy. Course will be taught at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH756S - Social Hierarchies and Health: Race, Ethnicity, Tribal Affiliation and Caste

Course Description
This course utilizes transnational comparisons to examine health inequities by socially constructed categories of human distinction, stratified hierarchies of differential human valuation and institutionalized social bias. The course opens by examining US specific racial and SES health disadvantage. It then addresses health inequity for a diverse range of international social systems. A central thesis of the course holds that health inequity is a manifestation of physically embodied stress from differences in lived experience that impact health beyond the effects of SES, individual behavior, health insurance, and medical care.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL756S SOCIAL HIERARCHIES & HEALTH

GLHLTH758 - Case Studies in Data Science for Global Health

Course Description
Application of statistical and data science skills to in-depth data analysis projects in global health. Principled use and interpretation of modern tools, including data wrangling and munging, visualization, exploratory analysis, predictive modeling, and inference using modern statistical software applied to global health data. Emphasis on communication of analysis results both technically and non-technically via presentations and written reports. Students must have access to data for course project. Prerequisite: GLHLTH 705.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH761S - Introductory Demographic Measures and Concepts

Course Description
Introduction to demographic concepts, measures, and techniques. Focus on population change, mortality, morbidity, fertility, marriage, divorce, and migration. Illustration of broader application of demographic measurement and techniques to other aspects of society and population health, such as educational attainment, labor force participation, linkages between mortality, morbidity and disability, and health and mortality differentials. Students will also learn how to apply methods discussed.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL840S DEMOGRAPHIC MEASURES/CONCEPTS

GLHLTH763S - Research Seminar in Sexual and Gender Minority Health

Course Description
This seminar course introduces students to global health policy and research focused on the health of sexual and gender minority (SGM) populations and is intended for students in preparation for research in social sciences and public policy focused on SGM health. Seminars are cooperative ventures and their success depends upon the full and active participation of each member of the class. Therefore, conscientious preparation and regular attendance are required. Each student is expected to develop a research project in SGM health.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH770D - Qualitative Data Analysis for Global Health

Course Description
Equips students with knowledge and skills to effectively analyze qualitative data in the field of global health. With a foundation in thematic analysis, teaches tools of memo writing, coding, diagramming and matrices to support the synthesis, interpretation and presentation of data in a systematic and rigorous way. NVivo software will be used to organize and manage the analytic process. Students should have previous qualitative coursework and/or qualitative experience. Best suited for students who have a qualitative data set that they are working to analyze toward a specific output (e.g., a publication, master's thesis or doctoral dissertation).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH770S - Qualitative Data Analysis for Global Health

Course Description
Equips students with knowledge and skills to effectively analyze qualitative data in the field of global health. With a foundation in thematic analysis, teaches tools of memo writing, coding, diagramming and matrices to support the synthesis, interpretation and presentation of data in a systematic and rigorous way. NVivo software will be used to organize and manage the analytic process. Students should have previous qualitative coursework and/or qualitative experience. Best suited for students who have a qualitative data set that they are working to analyze toward a specific output (e.g., a publication, master's thesis or doctoral dissertation).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH771 - One Health: From Philosophy to Practice

Course Description

Interdisciplinary course introducing construct of One Health as increasingly important to a holistic understanding of prevention of disease and maintenance of health. Includes discussion of bidirectional impact of animal health on human health, impact of earth's changing ecology on health. Learning objectives include 1) to describe how different disciplines contribute to the practice of One Health, 2) to creatively design interdisciplinary interventions to improve Global Health using a One Health model. Course will include weekly 2-hour multi-campus seminar off-site at NC Biotechnology Center with on-campus discussion section using case studies to supplement the seminar.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ENVIRON774 ONE HLTH: PHILOSOPHY/PRACTICE

GLHLTH772 - Global Health Research: Qualitative Field Methods

Course Description

Course builds on material from GLHLTH 702, but narrows focus to 1) qualitative field methods and 2) theories of the mixed method approach. A field-based, applied course designed to help students choose the qualitative field methods that best fit their project. Students will develop basic qualitative skills practiced by social sciences: ethnographic description, participant observation, interviewing. In addition, the course will introduce time allocation diaries and fieldnotes. Will discuss methods for collecting, analyzing, integrating, and reporting data from multiple sources. Finally, we will engage in ethical analysis as a core theme that unifies all stages of research.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

GLHLTH772K - Qualitative Methods in Health Research

Course Description

This course will introduce the application of qualitative methods in health research, with particular emphasis on their application in implementation research in relation to policy or program design and evaluation issues. The course will begin with an overview of the theoretical basis and ethics of qualitative research. It will focus on training in choosing the qualitative field methods, skills of data collection, approaches of data analysis and reporting the qualitative research results. Taught at Duke Kunshan University.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

GLHLTH773 - Performing Quality Systematic Reviews: A Didactic Methods Course

Course Description
Understanding and synthesizing the current available literature is a basic skill that is necessary in nearly all job markets. A systematic review is methodologically different from a literature review, with a science and method behind it which is important to ensure rigor and reproducibility. During this didactic methods course, students and professors will conduct a systematic review from question generation through data collection, data analysis, data visualization and manuscript completion during the semester. Our team based format allows group learning as well as individual self-paced didactic and short videos guiding students through the process of conducting a systematic review.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH773K - Deconstructing Global Injury Control and Prevention through Systematic Review Methods

Course Description
An introduction to the field of injury epidemiology and injury prevention. Prominent types of injury are very different in different settings and those to be discussed in the course are those related to motor vehicles, assaults, firearms, self-injurious behavior and global toxicology. Behavioral, biological, economic and social issues related to the implementation of injury reduction policies will be explored through case studies of specific injury scenarios and interventions. Course will delve into epidemiology, specific research methods and innovative research methods and articles. Taught at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GLHLTH774 - Program Evaluation for Health

Course Description
Covers the principles and tools of evaluation, starting with the evaluation planning process and ending with the dissemination of evaluation results and their use to inform action. Examines different approaches to evaluation (e.g., participatory evaluation), common evaluation designs, and the use of quantitative and qualitative data. Discuss 'real-life' evaluation challenges and explore current debates and developments in the field, utilizing examples of actual evaluations of health-related programs and policies (both domestic and international). For the course project, learners will work with local organizations to help the latter enhance their evaluation capacity.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH774K - Program Evaluation for Health

Course Description
Covers the principles and tools of evaluation, starting with the evaluation planning process and ending with the dissemination of evaluation results and their use to inform action. Examines different approaches to evaluation (e.g., participatory evaluation), common evaluation designs, and the use of quantitative and qualitative data. Discuss 'real-life' evaluation challenges and explore current debates and developments in the field, utilizing examples of actual evaluations of health-related programs and policies (both domestic and international). For the course project, learners will work with local organizations to help the latter enhance their evaluation capacity.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH777 - Infectious Disease Epidemiology in Global Settings — Surveillance, Prevention and Control

Course Description
Focus on communicable diseases in global settings, spanning individual level of diagnosis & treatment of infectious cases to population-level disease surveillance, prevention & control. Examines relationships between infectious disease & environmental health, including veterinary health. Expands upon topics introduced in MSc-GH core graduate coursework to build towards integrated understanding of infectious disease epidemiology. Three modules: 1) Foundations in Infectious Disease Epidemiology, 2) Disease Surveillance & Prevention, 3) Disease Treatment & Control. Course taught exclusively on-line. Open to graduate students at Duke and Duke Kunshan University only.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH777K - Infectious Disease Epidemiology in Global Settings — Surveillance, Prevention and Control

Course Description
MSc-GH core graduate coursework to build towards integrated understanding of infectious disease epidemiology. Three modules: 1) Foundations in Infectious Disease Epidemiology, 2) Disease Surveillance & Prevention, 3) Disease Treatment & Control. Course taught exclusively on-line. Open to graduate students at Duke and Duke Kunshan University only.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH778 - Global Health Programming, Policy, and Response: Approaches to and Use of Infectious Disease Models

Course Description
Infectious disease modeling is a broad term that covers many different approaches to applying mathematical techniques to describe or explain the infection, spread, or mitigation of a pathogen. Here we focus on models of human infection and population dynamics, exploring models that are based on first-principles as well as those that incorporate real-world data. Interviews with policy-makers from several countries who use models for planning health programming, both routine (as in the case of malaria) as well as pandemic response (COVID-19), will give a first-hand perspective of the use and shortcomings of models to guide public health response. Introductory statistics at the undergraduate or graduate level recommended.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH781 - Ungraded Research in Global Health

Course Description
Individual research in a field of special interest, the central goal of which is a substantive paper containing significant analysis and interpretation of a previously approved topic. Consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
9

GLHLTH781K - Ungraded Research in Global Health

Course Description
Individual research in a field of special interest, the central goal of which is a substantive paper containing significant analysis and interpretation of a previously approved topic. Course will be offered at Duke Kunshan University.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
9

GLHLTH782 - Internship in Global Health

Course Description
Students gain practical global health experience by taking an internship in the field and writing a report about the experience. Requires prior consent from the student's advisor and from the director of graduate studies. May be repeated with consent of the advisor and the director of graduate studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GLHLTH790K - Special Topics in Global Health

Course Description
Topics vary depending on semester and section. Topics may include global health ethics, field methods, health technologies, rapid needs assessment, and global health policies. Course will be offered at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH790S - Special Topics in Global Health

Course Description
Topics vary depending on semester and section. Topics may include: global health ethics, field methods, health technologies, rapid needs assessment, and global health policies.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH791 - Independent Study in Global Health

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in a significant academic product. By consent of instructor and DGS.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GLHLTH791K - Independent Study in Global Health

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in a significant academic product. Course will be offered at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GLHLTH792 - Independent Study in Global Health

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in a significant academic product. By consent of instructor and DGS.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

GLHLTH795 - Connections in Global Health: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing global health issues. Teams may also include postdoctoral fellows, visiting global health fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires substantive paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GLHLTH795T - Bass Connections Global Health Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty leaders to identify, refine, explore and develop solutions to pressing global health issues. Teams may also include postdoctoral fellows and experts from business, government and the nonprofit sector. A team's work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GLHLTH796 - Connections in Global Health: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing global health issues. Teams may also include postdoctoral fellows, visiting global health fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires substantive paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GLHLTH796T - Bass Connections Global Health Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty leaders to identify, refine, explore and develop solutions to pressing global health issues. Teams may also include postdoctoral fellows and experts from business, government and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GLHLTH840 - Ethics and Policy-Making

Course Description
Normative concepts in politics, liberty, justice, and the public interest: historical and philosophical roots, relationship to one another and to American political tradition, and implications for domestic and international problems. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL816 ETHICS AND POLICY-MAKING

GLHLTH870S - Global Health Graduate Certificate Seminar

Course Description
This seminar is required for the Global Health Graduate Certificate. Its contents will vary by semester but may include a combination of journal club, discussions with experts at Duke or external visitors, and research presentations.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

GLHLTH791-1 - Independent Study in Global Health

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in a significant academic product. By consent of instructor and DGS.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GLHLTH795-1 - Connections in Global Health: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing global health issues. Teams may also include postdoctoral fellows, visiting global health fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

GLHLTH796-1 - Connections in Global Health: Interdisciplinary Team Projects

Course Description
Teams of undergraduate and graduate students work with faculty supervisors to identify, refine, explore and develop solutions to pressing global health issues. Teams may also include postdoctoral fellows, visiting global health fellows, and other experts from business, government, and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, lectures, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

GREEK504 - Historians

Course Description
Investigation of the Greek concept and practice of writing history from the Atthidographers to Agathias, with attention to key themes, periods, historiographical conventions. Authors and works might include Herodotus, Thucydides, Xenophon, Polybius, Diodorus Siculus, Arrian, Appian, Eusebius, Procopius, Agathias.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

GREEK508S - Greek Philosophy

Course Description
Readings of philosophical works (e.g. fragments of the pre-Socratics, Plato's Dialogues, Aristotle's treatises). Prerequisite: Successful completion of at least one 300-level Greek course, or equivalent, or approval of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GREEK512S - Greek Rhetoric and Oratory

Course Description

Readings of rhetorical speeches and treatises (e.g. Demosthenes, Isocrates, Dio Chrysostom, Libanius, Plato's Gorgias, Aristotle's Rhetoric, Rhetorica ad Alexandrum); focus on oratory in action, rhetoric as academic discipline or combination of both. Prerequisite: Successful completion of at least one 300-level Greek course or equivalent, or approval of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GREEK516S - Ancient Greek Literary Criticism

Course Description

Readings from ancient Greek literary criticism (e.g. Aristophanes' Frogs, Aristotle's Rhetoric, Ps.-Longinus, Demetrius, Dionysius of Halicarnassus, Hermogenes, Menander Rhetor); from ancient grammarians (e.g. Aristarchus of Samothrace); from scholia (e.g. to Homer or to Pindar); and from authors, works, and trends in Greek literature under the Roman Empire. Recommended prerequisite: successful completion of at least one 300-level Greek course or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GREEK520S - Greek Epic

Course Description

Readings in Greek epic, with attention to genre, language, meter, poetics, characterization, narrative structure, ancient and modern interpretations, traditions beyond Greece and Rome, epic poems as codifiers of socially constructed cultural norms, and examination of Greek cultural identity. Authors and works might include the Iliad, the Odyssey, Apollonius' Argonautica, and/or the fragments of the epic cycle. Preqrequisite: Successful completion of at least one 300-level Greek course or equivalent, or approval of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GREEK524S - Greek Lyric

Course Description
Readings in Greek Lyric, with attention to genre, language, meter, poetics, persona, ancient and modern interpretations, traditions beyond Greece and Rome, and examination of gender and cultural identity. Authors and works include selections from Sappho, Pindar, Bacchylides, Callimachus, Theocritus, the Greek Anthology, and others. Prerequisite: Successful completion of at least one 300-level Greek course, or equivalent, or approval of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

GREEK528 - Drama

Course Description
Readings in the dramatic and mimetic genres, especially Attic Tragedy and Comedy, with attention to language, meter, staging, characteristic themes and conventions, and especially the cultural context of ancient drama and its use as an instrument of public ethical and political debate. Authors may include Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Sophron, Herodas, Lycophron.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GREEK534S - Ancient Greek Scholarship: G(r)eeks on Greek

Course Description
Team-based translation (and web publication) of ancient encyclopedias, lexica, scholia, commentaries, and other ancient scholarly works; most have not been translated into a modern language, so that the work of this class is an immediate, compelling, and citable contribution to scholarship.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GREEK544S - Readings in the Greek Novel

Course Description
A graduate level reading course in the Greek novel with attention to genre, distinctive themes, narrative structure and techniques, characterization, reception, and major trends in scholarship. Works include Achilles Tatius' Leucippe and Clitophon, Chariton's Chaereas and Callirhoe, Heliodorus' Aethiopica, Longus' Daphnis and Chloe, Lucian's True history, or Xenophon's Habrocomes and Anthia. Recommended prerequisite: Successful completion of at least one 300-level Greek course, or equivalent, diagnostic exam, or approval of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

GREEK551 - Elementary Greek for Graduate Students outside Classical Studies

Course Description
Structure of the language (grammatical forms, syntax, vocabulary, and pronunciation); introduction to reading. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

GREEK552 - Elementary Greek for Graduate Students outside Classical Studies

Course Description
Second half of Greek 551-552. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Prerequisite: Greek 551.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

GREEK580 - Survey of Greek Literature

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

GREEK582S - Greek Epigraphy

Course Description
Introduction to the field of Greek Epigraphy, its history, methods, and place within the field of Classical Studies. Close attention to reading and translation of the variety of inscribed documentary and literary Greek.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

GREEK586S - Papyrology

Course Description
Introduction to the field of Greek Papyrology, its history, methods and place within the field of Classical Studies. Close attention to reading and translation of the variety of documentary and/or literary papyrological Greek.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

GREEK653 - Intermediate Greek for Graduate Students outside Classical Studies

Course Description
Readings in classical Attic prose literature. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Prerequisite: Greek 552 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

GREEK654S - Advanced Intermediate Greek for Graduate Students outside Classical Studies

Course Description
Introduction to Athenian Drama. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Prerequisite: Greek 653.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

GREEK691 - Directed Reading and Research

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

GREEK711 - Intensive First Year Ancient Greek for Graduate Students

Course Description
Intensive introduction to ancient Greek language and culture. Includes structure of the language (grammatical forms, syntax, vocabulary, and pronunciation) and introduction to reading. Combines in one semester the work of Greek 101-102. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes including, e.g., additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
6

Max Units:
6

GREEK730S - Readings in the Greek Bible and the Greek Fathers for Graduate Students

Course Description
Readings in the Greek Bible and its ancient Greek reception. Texts may come from the Septuagint (the ancient Greek translation of the Jewish scriptures), the Greek New Testament, anonymous early Christian documents like the Didache, or from the works of the Greek Fathers. Study of the language (syntax and diction), textual history, authorship, composition and transmission, literary structure, social and historical contexts, message and aims, theological agenda, and ancient reception. A graduate version of GREEK 350S, this course features additional work commensurate with the expectations for graduate learning (including additional primary and secondary readings each week).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GREEK750S - Foundations of Ancient Greek: History, Morphology, Semantics, Syntax, Stylistics

Course Description
This course takes students through a graduate-level review of common features of ancient Greek. Emphasis will be on developing firm command of vocabulary, syntax, and certain aspects of the history of the language, while also developing an appreciation for elements of stylistics and fluency in reading at sight. Typical components of the course might include elements of historical linguistics, insofar as they illuminate and help with the command of morphology and semantics; practice in composition or similar exercises that nurture firm command of syntax; close reading of texts with a view to elucidation of stylistics; practice in reading at sight.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

GREEK764S - Seminar in Greek Literature I (Selected Topics)

Course Description
Selected authors and topics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GREEK768S - Seminar in Greek Literature II

Course Description
Broader themes in Greek Literature. Offerings might focus on themes such as Ancient Scholarship, Praise and Blame, Early Christian Authors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GS705 - Responsible Conduct of Research: Master's Degree Workshop

Course Description
Graduate-level training in research and professional ethics is a formal degree requirement for every master's degree student in The Graduate School beginning with Fall 2013 matriculation. Topics include the Duke Community Standard, academic integrity, research ethics, plagiarism and proper citation methods, authorship and intellectual property, and Duke resources to assist graduate students. Entering master's degree students must attend a four-hour orientation on various RCR topics to include training within departmental groups led by faculty.

Grading Basis
No Grade Associated

Units

Min Units:
0

Max Units:
0

GS705K - Responsible Conduct of Research: DKU Master's Workshop

Course Description
Graduate level training in research ethics is a formal degree requirement for every Master's degree student at Duke Graduate School/DKU beginning with Fall 2014 matriculants. Topics include the Duke Community Standard, academic integrity, research ethics, plagiarism and proper citation methods, authorship and intellectual property, and Duke resources to assist graduate students. Entering Master's degree students must attend a four-hour Orientation on various RCR topics to include training within departmental groups led by faculty.

Grading Basis
Credit / No Credit

Units

Min Units:
0

Max Units:
0

GS710 - Responsible Conduct of Research: Campus Workshop

Course Description
Graduate-level training in research and professional ethics is a formal degree requirement for every PhD student at Duke beginning with Fall 2003 matriculation. Topics include history of research ethics, academic integrity, preventive ethics, and Duke resources to assist graduate researchers. Entering PhD students must attend ONE (Humanities and Social Sciences OR Natural Sciences and Engineering) of the full day RCR orientation workshops held each Fall, except basic medical science students who attend Graduate Studies 710A.

Grading Basis
No Grade Associated

Course Typically Offered
Fall Only

Units

Min Units:
0

Max Units:
0

GS710A - Responsible Conduct of Research: Greensboro Workshop

Course Description
Graduate-level training in research and professional ethics is a formal degree requirement for every PhD student at Duke beginning with Fall 2003 matriculation. Topics include history of research ethics, academic integrity, preventive ethics, and Duke resources to assist graduate researchers. Entering PhD students in Basic Medical Sciences must attend a weekend retreat in Greensboro, NC.

Grading Basis
No Grade Associated

Course Typically Offered
Fall Only

Units

Min Units:
0

Max Units:
0

GS711 - Responsible Conduct of Research: Graduate Forums

Course Description
Beyond orientation training, PhD students must earn six additional credits of RCR training during their first three years of study. The Graduate and Medical Schools offer a series of RCR forums (two credits each) during the academic year. Topics include copyright and fair use laws, proper use of data, research with human or animal subjects, authorship, and mentoring. Other RCR training when pre-approved by The Graduate School may take a variety of formats including graduate courses, departmental seminars, or workshops.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

GS712 - Responsible Conduct of Research: Departmental Forum

Course Description

Beyond RCR training, Orientation training, PhD students must earn 6 additional credits of RCR training during their first three years of study. Departments, programs, or research centers can propose and offer more discipline-specific training for credit when pre-approved by the Associate Dean. Topics vary widely, but should relate to The Graduate School's RCR topics (academic integrity, conflict of interest, mentor/advisee roles, human or animal subjects, proper use of data, fiscal or social responsibility), and to ethical issues encountered when conducting research in the discipline.

Grading Basis

No Grade Associated

Course Typically Offered

Fall and/or Spring

Units

Min Units:

0

Max Units:

0

GS713 - RCR Forum- Basic Medical Sciences

Course Description

Required of 3rd year basic medical science graduate students as follow-up to GS710A RCR Orientation-Beaufort. Helps to fulfill RCR training requirements expected by NIH at least every four years. Uses didactic and small group interaction on scientific misconduct, questionable research practices, current topics in RCR, and interpersonal relationships in science, such as authorship, mentor/mentee relations, & responsibility of collaborators.

Grading Basis

No Grade Associated

Units

Min Units:

0

Max Units:

0

GS714 - Academic Integrity & Best Practices in RCR

Course Description

Examines best practices in the design, conduct, and communication of research. Topics include authorship, plagiarism, data use, intellectual property, and responsible publishing. Emphasizes accuracy, transparency, and adherence to ethical and professional standards.

Grading Basis

No Grade Associated

Course Typically Offered

Fall and/or Spring

Units

Min Units:

0

Max Units:

0

GS715 - Ethical Engagement in a Research Environment

Course Description

Focuses on respectful and responsible participation in research communities. Topics include professional relationships, advising, mentoring, and ethical conduct, with attention to how social context shapes both collaboration and the content of scholarly work.

Grading Basis

No Grade Associated

Course Typically Offered

Fall and/or Spring

Units

Min Units:

0

Max Units:

0

GS716 - Responsible Conduct of Research: Mentoring & Wellness

Course Description
Responsible Conduct of Research (RCR) training is a critical component of graduate education. Mentor/advisee responsibilities, conflict of interest or commitment, navigating professional relationships, campus mental health resources, stress management. Instructor consent required.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

GS717 - RCR: Best Practices in Responsible Scholarship

Course Description
Responsible Conduct of Research (RCR) training is a critical component of graduate education. Explore and discuss best research practices with faculty, librarians and other academic staff. Topics include human subjects, IRB, animal subjects, data management, collaborative research, university-industry guidelines, fiscal responsibility, research costing compliance, inventions, patents, and technology transfer, project management, citation management, discipline-specific RCR issues. Instructor consent required.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

GS720 - EIS Academic Writing I

Course Description
In Academic Writing I, students improve their writing skills by writing multiple drafts of some of the standard graduate-level text forms. Peer review and instructor feedback are offered to help students advance to the highest level of proficiency. In the process of writing papers, students also develop an awareness of text purpose and audience expectation while improving grammar and vocabulary skills. Specific skills such as how to recognize and avoid plagiarism are taught through paraphrasing and source citation.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GS720K - Academic Writing for EFL Students

Course Description
In Academic Writing, students improve their writing skills by writing multiple drafts of some of the standard graduate-level text forms. On all drafts, peer review and instructor feedback are offered to help students advance to their proficiency levels. In the process of writing their papers, students also develop an awareness of text purpose and audience expectation while improving grammar, vocabulary and reading skills. Specific skills such as recognizing and avoiding plagiarism are taught through appropriate paraphrasing and source citation.

Grading Basis
Credit / No Credit

Units

Min Units:
3

Max Units:
3

GS721 - EIS Oral Communication

Course Description

In this active, practical course, students improve their ability to communicate effectively and confidently in academic and professional settings. Multiple opportunities for recorded practice in and out of class allow students to reflect on their own performance and use peer and instructor feedback to develop strategies for improving future interactions. Course topics include small talk; participating in and leading discussions; self-introductions; networking; interviewing language; elements of speech based on student needs; and self-analysis and reflection. By the end of this course, students will more successfully and confidently participate in academic and professional communities.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

GS721K - Academic Communication Skills

Course Description

For non-native English speakers. Instruction in oral communication, with significant focus on assessing and improving English pronunciation and listening skills. Develops oral communication skills in specific academic settings, e.g. seminars, professional networking, interviews; includes field-specific presentations and Q&A. Participation in and facilitation of group discussions for mastery of language functions, grammatical accuracy, and fluency. Extensive vocabulary work. Filmed presentations with instructor feedback, peer review and self-evaluation. Individual instructor/student conferences. Taught at Duke Kunshan University.

Grading Basis

Credit / No Credit

Units

Min Units:

3

Max Units:

3

GS724 - EIS Writing in the Social Sciences and Humanities

Course Description

Specifically designed for students in the social sciences and humanities. In this course, students will prepare a Definition paper, a Literature Review paper, and an individual Final Project paper.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

GS726 - EIS Writing in STEM Fields

Course Description

Specifically designed for students in STEM (science, technology, engineering, and mathematics) fields. In this course, students will prepare a Problem-Solution paper, a Data Visualization and Interpretation paper, and an individual Final Project paper.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

GS730 - EIS Academic Writing II

Course Description

This course concentrates on developing advanced academic writing skills. Students analyze and produce both general and discipline-specific texts and improve use of grammatical, syntactic, and rhetorical structures of academic writing. Through individualized instructor and peer feedback, students increase awareness of their individual writing strengths and weaknesses. They gain experience revising texts and using online and other academic resources, which facilitate continued, self-directed learning. The writing assignments include Problem-Solution Paper, Literature Review, and Research Paper. Course topics also include field-specific style, audience awareness, flow, and source synthesis.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GS731 - EIS Academic Presentations

Course Description

In this course, students develop their presentation and language skills by making presentations of increasing length and complexity. Students learn how to develop presentations that are appropriate for their audience and time limit, that have clear organization and transitions, and that include effective visuals. They also practice presenting effectively by paying attention to eye contact, body language, pace, and by participating in question-and-answer (Q&A) sessions. Students enhance their language skills, including pronunciation and word choice, through classroom instruction and practice and by receiving feedback on presentation content and delivery.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GS732 - EIS Advanced Academic Writing for PhD Students

Course Description

This course is designed for advanced Ph.D. students writing a dissertation, publication, or other major research project. Students work on their own major writing project throughout the semester. Students develop advanced academic writing skills by analyzing and producing a discipline-specific text form and improving control over grammatical, syntactic, and rhetorical structures. Through individualized instructor attention, peer review, and field specific feedback, students improve awareness of their individual writing strengths and weaknesses. Additionally, they gain experience revising their texts and become familiar with academic resources, facilitating self-directed learning.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GS740 - EIS Pronunciation

Course Description
This course focuses on increasing students' intelligibility (ability to be understood) through recognition and production of basic sounds and patterns in spoken US English, awareness of student-specific challenges, and development of self-practice strategies. Topics include the articulation and perception of US English vowel and consonant sounds, syllable and word stress, rhythm, and intonation. Students learn to use volume, vocal energy, and pacing to enhance clarity and meaning. They also work on increasing their awareness and accuracy of grammatical items particularly important for fluency, such as contractions, singular/plural, and present-tense and past-tense endings. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

GS750 - Fundamentals of College Teaching

Course Description
Designed for graduate students who may serve as Teaching Assistants; Topics include communication skills with faculty and students, learning styles and motivation, campus resources for personal and educational support, basic instructional technology, teaching methods and learning spaces, active learning, effective discussions and grading criteria.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

GS755 - College Teaching and Course Design

Course Description
Designed for graduate students seeking to teach an independent course at Duke and beyond; topics include models of course design, syllabus construction, critical thinking, college student development, clarifying learning objectives, variety in assignments, small versus large class size, group dynamics, classroom assessment techniques, test construction, and grading rubrics.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

GS760 - College Teaching and Visual Communication

Course Description
Visual communication for teaching and other professionals in print, in face-to-face situations and online. Includes intro to web design, intro to graphic design, effective presentations, development of an electronic teaching portfolio and exploration of other instructional technology for college teaching. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

GS762 - Online Teaching & Digital Pedagogy

Course Description

Overview, case studies, comparison of different formats of online and hybrid courses. Evaluation and assessment of learning outcomes in online environments. Syllabus design and materials production for online courses. Intellectual property issues in online education. Concepts and practices for developing your own online course. Course director's permission required. Prerequisite: at least one Graduate Studies course in college teaching, 750 or higher.

Grading Basis

Credit / No Credit

Units

Min Units:

1

Max Units:

1

GS764 - Generative AI in College Teaching

Course Description

Designed for advanced PhD students from all fields who want to explore how artificial intelligence (AI) can improve teaching and learning in higher education. Hybrid course includes significant online component as appropriate for content. The course satisfies a requirement for the Certificate in College Teaching.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

GS765 - College Teaching Demonstrations & Feedback

Course Description

Video recorded peer teaching demonstrations, observation and feedback at college level. Presentation of a series of progressively longer and more interactive microteaching demonstrations. Effective use of methods and materials in college classroom instruction. Recommended prerequisite: Previous pedagogical training or teaching experience.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

GS767 - Teaching Diverse Learners

Course Description

Today's college students are diverse in race, gender, national affiliation, age, economic background, sexual orientation, religious affiliation, educational background, and many more factors. Effective college instructors are prepared to teach diverse student bodies, including students who do not share their individual experience. This course will address teaching practices to promote inclusion and equity and will also address related, current topics in higher education. This course is for anyone interested in 1) creating more inclusive learning environments, 2) teaching students from diverse backgrounds more effectively, and 3) exploring individual instructional biases.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:
1

Max Units:
1

GS770 - Topics and Careers in Higher Education

Course Description
Designed for advanced doctoral candidates exploring faculty or administrative careers in higher education. Topics include the range of faculty roles and responsibilities, academic governance, institutional cultures and mission, hiring and review processes, alternative academic careers, challenges for women and underrepresented minorities, and current issues in higher education.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

GS772 - Bass Digital Education Colloquium

Course Description
Critically reflect on digital pedagogies and emerging technologies to design a faculty-led project; participate in regular workshops; apply project methodologies to execute a faculty-led digital learning project; develop a digital portfolio for your future professional career; showcase a final project in a spring symposium for the Duke community and meaningfully contribute to and benefit from participation in a teaching and learning community of faculty, digital fellows, and education leaders, in partnership with Duke Learning Innovation. Prerequisite: Graduate Studies 762. Instructor consent required.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

GS775 - Colloquium on the Academic Profession

Course Description
This course is designed to explore faculty roles and responsibilities at various types of colleges and universities. It will bring together faculty from schools in the Triad and Triangle area to discuss such topics as: how teaching is evaluated and weighed at different institutions; what counts as service; what are different schools looking for in new faculty appointments; how can you maintain a research career in a school whose priorities are undergraduate teaching; what makes a good mentor; departmental politics. The course is restricted to Preparing Future Faculty Fellows and will meet monthly on the campuses of Durham Technical Community College, Duke, Elon College, Guilford College, Meredith College, NCCU, and NCSU.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

GS780S - Graduate Instructor of Record Seminar

Course Description
Interdisciplinary learning community for graduate students concurrently teaching their own college-level course as instructor of record; engagement with colleagues around personal and professional development; peer observation of teaching; review of policies and resources to support IORs; exploration of current topics connected to college teaching; offered to support development as collegial, reflective instructors. Enrollment limited to advanced PhD students concurrently teaching their own college course as a formally designated instructor of record. Fulfills some requirements for Certificate in College Teaching.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

GS790 - Special Topics in College Teaching

Course Description
Special topics in college teaching and higher education. Enrollment prioritized for students enrolled in Certificate in College Teaching. Topics vary by semester.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

GS791 - Independent Study: Special Topics

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GS798 - Teaching Triangles: College Teaching Practicum & Observation

Course Description
Peer observation of teaching in a college setting; review of best practices and practical guidelines for conducting classroom observations; engagement with instructional colleagues across disciplines; self-reflection on development as a teacher. Prerequisites: 1) students must be concurrently teaching as instructor of record, TAing with an instructional role or otherwise acting as a regular, primary facilitator of instruction in a college setting; 2) students must have completed or be enrolled in another course or training with a pedagogical focus. Fulfills requirement for teaching and observation in certificate in college teaching (Teaching Triangles.)

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0.5

Max Units:
0.5

GS805 - Writing in the Natural Sciences

Course Description
Major concepts for effective research-based scientific writing. Topics include: genres of scientific research writing; structure and function of research reports; grant proposals; introductions and literature reviews; writing methods; presenting results; designing diagrams, figures and tables; citations; writing with equations; sentence style and clarity; paragraphing for flow; plagiarism and text recycling. Priority for advanced PhD students in the natural sciences with specific writing projects/needs. Instructor consent is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

GS810 - Grant and Fellowship Writing in the Humanities and Social Sciences

Course Description
Major concepts for effective persuasive writing for grant and fellowship applications in humanities and social sciences disciplines. Topics include: overview of funding opportunities in the humanities and social sciences; structure of grant proposals; structure of fellowship applications; effective writing for an interdisciplinary audience; writing methods; editing and revision strategies. Consent of instructor is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

GS950 - Experiential Learning Workshop

Course Description
Provides structure for doctoral students to pursue experiential learning in support of their major academic subject. Students reflect on concurrent experiential activities (internships, interdisciplinary research teams, group consulting projects), and integrate these experiences into their larger academic and professional trajectories. Through group discussion and reflective writing assignments, students consider how their experiential learning informs academic research content and practice. Students also identify skills honed through academic research that are transferable and valuable beyond academia. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

GS990 - Duke Graduate Academy

Course Description
Topics designed to introduce graduate students to skills, tools, and knowledge that augment their regular coursework and help them prepare for dissertation research, innovative teaching, leadership, and/or public engagement.

Grading Basis
No Grade Associated

Course Typically Offered
Summer Only

Units

Min Units:
0

Max Units:
0

GSF501S - History of Sexuality

Course Description

Explore history of sexuality around the globe, covering diverse time periods and regions. Examine methods and theories used in the study of sexuality, with attention to topics such as fertility, kinship, marriage, heterosexuality, homosexuality, birth control, sexology, and community formation.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

HISTORY501S HISTORY OF SEXUALITY

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

GSF502S - Queer China

Course Description

Examines queer discourses, cultures, and social formations in China, Greater China, and the global Chinese diaspora from the late imperial period to the present. Course will focus on cultural representations, particularly literary and cinematic, but will also consider a wide array of historical, anthropological, sociological, and theoretical materials. Not open to students who have taken Asian and Middle Eastern Studies 439.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AMES539S QUEER CHINA, CULANTH539S QUEER CHINA, LIT539S QUEER CHINA, VMS539S QUEER CHINA, RIGHTS539S QUEER CHINA

General Education Curriculum Codes

(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

GSF510S - New Directions in Asian American Studies

Course Description

Reading-intensive seminar in the recent scholarship and cultural production that is pushing Asian American Studies in new directions, challenging preconceptions about the dominant narratives, geographic scope, and political assumptions in Asian American Studies. Possible topics include: imperialism, ecology, settler colonialism, disability studies, transnationalism, critical refugee studies, and feminist and queer politics. A significant portion of the course is devoted to students developing their own research projects.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

HISTORY510S NEW DIR IN ASIAN AM STUDIES, AADS510S NEW DIR IN ASIAN AM STUDIES, AMES550S NEW DIR IN ASIAN AM STUDIES

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations

GSF511S - Dystopia, Speculation, and the Transhuman: Octavia Butler

Course Description

This course will examine the work of science fiction writer, Octavia Butler. Critically engaging her novels and short stories, we will discover and work through a series of themes and tropes - dys(u)topia, the transhuman, temporality, the apocalyptic, survival, and hierarchical thinking as the root of racism and sexism. We will ask questions in this course about the relationship between sci-fi, speculative fiction, and the imagination of the present. In addition, Butler's fiction, which imagines various forms of miscegenation and interspecial contact, will invite us to deconstruct and re-imagine the figure of the human.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AAAS511S OCTAVIA BUTLER, RELIGION505S OCTAVIA BUTLER, ENGLISH571S OCTAVIA BUTLER

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

GSF521S - Black Ethnographers

Course Description

What is ethnography, broadly defined? How is a scholar's ethnographic product shaped by their racialized experience? We will use books, articles, podcasts, documentaries, music, dance, and poetry for an in-depth study of the various ways that U.S.-based Black intellectuals in the social sciences have used ethnography to make sense of and theorize our and their everyday social worlds. We will pay special attention to questions of sexism, anti-Black racism, white supremacy, and colonialism, as these become relevant to the scholars' work, relationships to their disciplinary homes, and lived experiences.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CULANTH521S BLACK ETHNOGRAPHERS, AAAS521S BLACK ETHNOGRAPHERS, SOCIOL521S BLACK ETHNOGRAPHERS, ICS521S BLACK ETHNOGRAPHERS

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

GSF526S - Crafting Ethnography

Course Description

This seminar examines the status of ethnography as both research endeavor and narrative craft. Ethnography is at a crossroads: it both continues to be debated as cultural anthropology's 'signature' method of inquiry, and yet also is increasingly in demand as a worldview applicable to many other disciplines and professions. If ethnography is in a moment of continual experimentation, what then structures its craft?

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CULANTH529S CRAFTING ETHNOGRAPHY, ICS526S CRAFTING ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

GSF541S - Historical and Philosophical Perspectives on Science

Course Description
An integrated introduction to the nature of science and scientific change, and its impact on society. Counts as elective for the Science & Society Certificate Program.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL541S HIST/PHIL PERSPECT ON SCIENCE, LIT521S HIST/PHIL PERSPECT ON SCIENCE, HISTORY577S HIST/PHIL PERSPECT ON SCIENCE

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (CZ) Civilizations

GSF590 - Topics in Gender, Sexuality and Feminist Studies

Course Description
Lecture version of GSF 590S.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

GSF590S - Topics in Gender, Sexuality and Feminist Studies

Course Description
A seminar in contemporary issues, methodology, and/or selected theoretical questions pertaining to feminist scholarship.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GSF602S - Blackness, Social Death, and the Volatile Sacred

Course Description
In recent years, we have witnessed a renewed energy around theorizing blackness and its unsettling presence in the world. In addition to endeavors to think through the antagonistic relationship between blackness and the ideal human, authors have addressed topics such as black gender, the affinities and tensions between blackness and queerness, the ways in which blackness interrupts the logic of property, and the particular qualities of anti-black violence. In this course, we will pursue an aspect of contemporary black thought that has been central but undeveloped -- how blackness reimagines the religious and the sacred. Authors: Spillers, Wynter, Hartman, Sharpe, Moten, Glissant, Gumbs.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS602S BLACKNESS,SOCIAL DEATH,SACRED, RELIGION605S BLACKNESS,SOCIAL DEATH,SACRED, ENGLISH680S BLACKNESS,SOCIAL DEATH,SACRED

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GSF609S - Transpacific and Global Asia/America: Connecting Divided Histories and Knowledges

Course Description
This theory and methodology course introduces texts in Asian American studies and global and critical Asian Studies through the oceanic and archipelagic lens of the transpacific. Explores historical and disciplinary fault lines among Asian Studies, Asian/American Studies through higher ed, as well as entangled and divided histories of Asia and the Americas. Navigates legacies of colonial, cold war, and postcolonial histories between Asia and the Americas. Centers power dynamics of knowledge formation, translation, circulation across divides in history, journalism, academia, literature, films, digital and art works, gaming, community engagement, museums and archives, and law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES609S TRANSPACIFIC ASIA/AMERICA, AADS609S TRANSPACIFIC ASIA/AMERICA, CULANTH609S TRANSPACIFIC ASIA/AMERICA, CINE609S TRANSPACIFIC ASIA/AMERICA, ARTHIST609S TRANSPACIFIC ASIA/AMERICA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

GSF611S - Film Feminisms

Course Description
Philosophical debates and approaches to the female form in film theory and history. Phenomenology, cultural studies, Marxism, psychoanalysis, structuralism, post-structuralism, as well as gaze theory, apparatus theory, and feminist film theory as they approach readings of the body, subjectivity and identity in cinema. Questions of spectatorship and the gendered subject. Screening and discussion of Hollywood and European avant garde films key to early debates, and of international films central to debates around the gendered subject and representation in modernity. Interrogation of feminist approaches to national cinemas.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT611S FILM FEMINISMS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

GSF648S - The Palestine Seminar

Course Description
The seminar explores new directions in Palestinian studies from multiple disciplines. It foregrounds the work of scholars and creatives (writers, filmmakers, artists) from Palestine and its diaspora. The seminar is historically and theoretically-oriented using a transnational feminist lens and includes substantial gender and sexuality content. Seminar participants will read (or watch) assigned books, articles, chapters, films, and other material and discuss them with the author or an artist, typically by Zoom. A one-day hybrid conference on sexualities is associated with the seminar.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GSF651S - Black Queer Studies

Course Description
This course offers an introductory survey of Black Queer Studies. Beginning with a brief survey of foundational texts, we will discuss the range of emergent within the interdisciplinary body of work referred to as Black Queer Studies. We then explore a range of black queer pop cultural formations including film, ballroom culture, drag, poetry, fiction, and music. And finally discuss the theoretical and practical implications of applying queer theory to understand the lives and experiences of black lesbian, gay, bisexual, and transgender individuals as well as black heterosexuals, frequently marked as being outside of normative frameworks of sexuality, and thus queer.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
AAAS651S BLACK QUEER STUDIES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

GSF660S - Games, Play, and Selfhood: Immersive Media and Extended Realities

Course Description
Interdisciplinary study of history, theory, criticism, practice of immersive and interactive media, with emphasis on virtual worlds, games, and extended reality. Cross-cultural interpretative frameworks, intersectional theories, comparative approaches across East/West and Global South. Critical examination of the metaverse and playable, interactive environments as analog, historic, and contemporary phenomena. Online selfhood, avatar identities, and digital cultures. Ludology versus narratology, hyperreality, agency, aesthetics. Theories of space, place, memory, gamification, participatory media. Applications in museums, cultural heritage, art, journalism, theater, and popular media. Hands-on testing and digital authoring. Blogs, critical research paper, final projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS660S GAMES, PLAY, AND SELFHOOD, VMS660S GAMES, PLAY, AND SELFHOOD, CMAC660S GAMES, PLAY, AND SELFHOOD, AMES660S GAMES, PLAY, AND SELFHOOD

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

GSF682S - Simone de Beauvoir

Course Description
An in-depth study of Beauvoir as a philosopher, novelist, memoirist and feminist theorist. Understanding Beauvoir as an existentialist intellectual in mid-century France.Emphasis on The Second Sex. Wide-ranging reading of Beauvoir's novels, non-fiction, and memoirs, both with relevant philosophers and theorists, such as Sartre, Merleau-Ponty, and with more recent feminist theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT682S SIMONE DE BEAUVOIR, FRENCH682S SIMONE DE BEAUVOIR, PHIL682S SIMONE DE BEAUVOIR

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

GSF701S - Foundations in Feminist Theory

Course Description
Required for all students pursuing the graduate certificate in Women's Studies, this course serves as an in-depth introduction to the various theoretical frameworks that have and continue to inform scholarship in the field of Women's Studies. It explores differences between distinct feminist theoretical traditions (Marxist feminism, poststructuralism, psychoanalysis, queer theory) and seeks to historicize accounts of identity, difference, social movement, globalization, nationalism, and social change. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT761S FOUNDATIONS IN FEMINIST THEORY

GSF707S - Precarity and Affect

Course Description
Explore the two concepts of precarity and affect in terms of their intersection, overlap, and interface: How is affect experienced and produced under conditions of global capitalism and expanding inequity, risk, and insecurity in social living around the world? The course will tack between theoretical and ethnographic studiers of the two concepts, considering their utility, how they can be expanded in other directions, and what an anthropological approach does, our could, lend to these topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH707S PRECARITY AND AFFECT, LIT707S PRECARITY AND AFFECT, SOCIOL771S PRECARITY AND AFFECT

GSF708S - Anthropology of Contact: Contagion, Coloniality, Capital

Course Description

In this course, we will find out what an 'anthropology of contact' can do to advance a critical analysis of culture. Contact is a prerequisite for human existence, and it can also destroy existence. Across various contexts from colonial encounters to contagious disease, we will look at what bodies exchange when they exist in proximity. We will read theoretical, historical, and ethnographic texts. Topics include malaria in the Philippines; sexuality in gentrifying New York; human porosity and toxicity; and labor and liberalism in imperial exchange.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CULANTH708S ANTHROPOLOGY OF CONTACT, HISTORY708S ANTHROPOLOGY OF CONTACT, LIT708S ANTHROPOLOGY OF CONTACT

GSF709S - Science, Medicine, and the Body

Course Description

Introduces students to scholarship about the body's complex relations to science, technology and medicine. Examines how embodied knowledges and experiences of pain, disease, injury, and ability relate to forms of gender, sexuality, race, state power, coloniality, and capital. Explores these connections across debates in medical anthropology, science and technology studies, cultural theory, and the medical humanities, while paying close attention to different genres of writing.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CULANTH709S SCIENCE, MEDICINE, BODY, SCISOC709S SCIENCE, MEDICINE, BODY, GLHLTH709S SCIENCE, MEDICINE, BODY, LIT709S SCIENCE, MEDICINE, BODY

GSF718S - Movement in Question: Proseminar in Critical Dance Studies

Course Description

This writing-intensive seminar engages graduate students in multiple ways with the interdisciplinary field of critical dance studies. Students will read and analyze foundational texts and theories on dance and movement from global perspectives and rehearse a honed capacity to interpret movement on semiotic, phenomenological, cultural, and material grounds in their writing. Participatory movement workshops integrate adaptive activities that make gaps between textual representation and embodiment visible. This holistic approach throws movement into question and centralizes dance as a critical way of making the world. Zero formal dance experience is required. Graduate students from all backgrounds are welcome.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

DANCE718S MOVEMENT IN QUESTION, ARTSVIS718S MOVEMENT IN QUESTION

GSF732S - Women in Art: Early Modern Women Artists, Patrons, and Networks

Course Description
Course focuses on women artists in early modern Italy and Europe. Issues of education and training, practice, patronage, professional networks, and markets will be at the center of attention along with issues of historiography and feminist theory. Objectives are to ensure solid knowledge of the artistic practice of women in early modern Europe within the relevant social, legal, and financial contexts; mastery of the relevant theoretical frameworks, current debates, and scholarship; and development of students' independent analytical and research skills. No textbook is adopted. Students will read and discuss a set of critical books provided by the instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST732S WOMEN IN ART

GSF740S - Critical Genealogies

Course Description
This course serves as an in-depth investigation into the many different theoretical traditions that inform interdisciplinary feminist studies. Specific foci include Marxist-feminism, poststructuralism, feminist film theory, psychoanalysis, French feminism, postcolonial theory, deconstruction, the Frankfurt school, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES740S CRITICAL GENEALOGIES, CULANTH746S CRITICAL GENEALOGIES

GSF750S - Gender and Aesthetic Theory

Course Description
This seminar asks about the historical role played by feminine figures—muses, maidens, mothers, lovers—in the construction of aesthetic epiphanies and metamorphoses. The notion of Woman as a conduit for inspiration has a long theological, philosophical and literary tradition, beginning with the early Christian topos of the Virgin Mary as an 'aquaduct of grace.' We will interrogate this topos in search of a different and deeper understanding of what it has meant, historically, to be transformed by a work of art. Authors to be explored include Dante, Rousseau, Goethe, Schopenhauer, Wagner, Bachmann, Lacan, Irigaray, Kristeva, Kittler, and Latour. Discussions and readings in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN750S THE ETERNAL FEMININE, LIT750S THE ETERNAL FEMININE, ROMST750S THE ETERNAL FEMININE

GSF765S - Existentialism, Nihilism, and Religion

Course Description
This course engages the relationship between nihilism, which claims that there are no secure foundations that provide life with meaning and purpose, and existentialism, a philosophy that prioritizes the freedom and responsibility of the individual subject against essential truths that precede existence and human striving. We will interrogate what it means to live in the afterlife of what Nietzsche calls the 'death of God' and question whether this spells the end of religion, spirituality, and the need for practices of the sacred. We also interrogate how race and gender pertain to questions about existence, being, nothingness, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION765S EXISTENTIALISM, NIHILISM, RELI, AAAS765S EXISTENTIALISM, NIHILISM, RELI, ENGLISH765S EXISTENTIALISM, NIHILISM, RELI

GSF771S - Graduate Seminar: Theories of Corporeality

Course Description
This graduate reading seminar explores theoretical frames for articulating the social, political, cultural, phenomenological and economic significance of the body. Course literature draws significantly although not exclusively from dance and performance research to consider a wide range of approaches to corporeality studies. Required reading, viewing of performance texts, and guest presentations, and workshops draw surgical attention to the body as a discursive site and to performance as a site of embodied power and potential resistance. Students contribute knowledge across a range of graduate writing genres. Course culminates in the creation of an original research project. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE771S THEORIES OF CORPOREALITY, MUSIC771S THEORIES OF CORPOREALITY

GSF780S - Teaching Race, Teaching Gender

Course Description
Interdisciplinary analyses of the problematics of teaching about social hierarchies, especially those of race, class, and gender. Curricular content and its interaction with the social constructions of students and teachers.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS780S TEACHING RACE, TEACHING GENDER, HISTORY780S TEACHING RACE, TEACHING GENDER, LIT780S TEACHING RACE, TEACHING GENDER

GSF820 - Consent: Sex and Governance in the Age of Revolution

Course Description
An exploration of the rise of the notion of consent in the 18th century. Consent came to serve as the foundation of legitimacy and ethics within both political and conjugal unions, yet women's agency with regard to consent remained ambiguous in both cases, entwining discourses on rape and disenfranchisement with political theory. Seminar will focus on constructions of will, desire, reason, autonomy, and political voice in theory and literature from around 1800, juxtaposed with more recent theory. Particular attention paid to the reciprocal authorization between political theory and emerging field of biology. Will engage with current debate on the definition of consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN820 CONSENT

GSF860S - Major Figures in Feminist Thought

Course Description
An examination of the thought of some of the significant figures in history who have been influential in the evolution of feminist thought and theory. These may include Derrida, Irigaray, Foucault, Freud, etc. This course may be taken more than once for credit.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT760S MAJOR FIGURES/FEMINIST THOUGHT

GSF890 - Advanced Topics

Course Description
Lecture version of GSF 890S.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GSF890S - Advanced Topics in Feminist Studies

Course Description
A selected topics seminar on emergent theoretical and empirical questions in feminist scholarship.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

GSF891 - Independent Study

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product. Consent of Instructor and Director of Graduate Studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

GSF960S - Interdisciplinary Debates (Topics)

Course Description
Designed for advanced graduate students, this course will highlight current debates in feminist studies through a topical approach that draws on faculty research and expertise.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

HCVIS504SL - Building Duke: An Architectural History of Duke Campus from 1924 to Today

Course Description
Research seminar and laboratory on the architectural history of Duke Campus based on original archival materials (photos, blueprints, contracts, letters, and financial records) preserved in Duke Library collections. Explores the variety of interpretative lenses in the field of architecture history, including, but not limited to, issues of style, patronage, labor, class, gender, and race. Analyzes notions of cultural identity as construed by Duke founders and administrators, and as imprinted on Duke Campus by its architects and landscape designers. Original research projects based on primary materials and digital visualizations of changes in the physical fabric of Duke Campus through time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST504SL BUILDING DUKE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

HCVIS580S - Historical and Cultural Visualization Proseminar 1

Course Description
Interactivity and online content management through databases, collaborative blogs, and other systems. Data visualization based on textual, image, and quantitative sources. Basic techniques for virtual reality, simulations, augmented reality, and game-based historical and cultural visualization project development. Mini-projects based on existing and new research data from the Smith Media Labs and other sources. Best practices for digital research project planning and collaboration. Theoretical topics include: critical digital heritage, virtuality and culture, information aesthetics, hypermedia information design. Instructor consent required.

Grading Basis
GRD - Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS580S DIGITAL HUMANITIES PROSEM 1, ISS580S DIGITAL HUMANITIES PROSEM 1, ARTHIST580S DIGITAL HUMANITIES PROSEM 1, CMAC580S DIGITAL HUMANITIES PROSEM 1

HCVIS581S - Historical and Cultural Visualization Proseminar 2

Course Description
2D and 3D imaging, modeling; raster and vector graphics sources, laser scanners, photogrammetric software, basic database structures. Digital mapping and GIS. Presentation strategies and best practices for the web (standards-compliant HTML/CSS/Javascript), multimedia (audio/video/animation), scholarly annotation, intellectual property. Theoretical, ethical issues in field of new media and digital humanities. Epistemological issues re: mediation and visualization, ethics of intellectual property, politics of geospatial visualization, digital materiality, affordances of new media narrativity. Instructor consent required.

Grading Basis
GRD - Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST581S COMPUTATIONAL MEDIA PROSEM 2, VMS581S COMPUTATIONAL MEDIA PROSEM 2, ISS581S COMPUTATIONAL MEDIA PROSEM 2, CMAC581S COMPUTATIONAL MEDIA PROSEM 2

General Education Curriculum Codes
(STS) Sci, Tech, and Society, Crosslisted, (ALP) Arts, Lit & Performance

HCVIS613S - Computational Media Studio in Advanced Digital Practice

Course Description
Advanced digital practicum in interactive computational media as vehicle for creative and critical expression. Opportunity to synthesize previous course work in multimedia practice, web/graphic/motion design, 3D modeling/gaming, computer programming. In-depth exploration of computational media production as artistic practice through exercises, projects, and critiques. Acquisition and refinement of expertise in procedural and object-oriented programming, two- and three-dimensional graphics, data visualization, physical computing, AR/VR, and other emergent computational platforms. Sustained engagement with computational ethics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC613S COMP MEDIA STUDIO ADV DIG PRAC, VMS613S COMP MEDIA STUDIO ADV DIG PRAC, ISS613S COMP MEDIA STUDIO ADV DIG PRAC

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

HCVIS791 - Individual Thesis Research In Historical and Cultural Visualization

Course Description
Directed research and writing in Historical and Cultural Visualization. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HCVIS792 - Individual Thesis Research In Historical and Cultural Visualization II

Course Description
Directed research and writing in Historical and Cultural Visualization. Consent of department required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

HCVIS795S - Digital Art History/Computational Media Thesis Writing Workshop

Course Description
Support for the writing of the thesis paper through multiple drafts and group discussion. Writing of documentation and reflection of the MA in Digital Art History/Computational Media digital project.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST795S MA THESIS WRITING WORKSHOP, CMAC795S MA THESIS WRITING WORKSHOP, VMS795S MA THESIS WRITING WORKSHOP

HCVIS796L - Media, Arts & Cultures Research Practicum I

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC796L RESEARCH PRACTICUM I, VMS796L RESEARCH PRACTICUM I, ISS796L RESEARCH PRACTICUM I

HCVIS797L - Media, Arts & Cultures Research Practicum II

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC797L RESEARCH PRACTICUM II, VMS797L RESEARCH PRACTICUM II, ISS797L RESEARCH PRACTICUM II

HCVIS798L - Media, Arts & Cultures Research Practicum III

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC798L RESEARCH PRACTICUM III, VMS798L RESEARCH PRACTICUM III, ISS798L RESEARCH PRACTICUM III

HCVIS799L - Media, Arts & Cultures Research Practicum IV

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC799L RESEARCH PRACTICUM IV, VMS799L RESEARCH PRACTICUM IV, ISS799L RESEARCH PRACTICUM IV

HEBREW791 - Independent Study

Course Description
Individual study of language for conducting research involving sources written or spoken in the language. Students have to submit a proposal describing the purported research, types of sources to be analyzed, and kinds of language knowledge or skills they need to be equipped with. Consent of instructor and director of undergraduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HINDI791 - Independent Study

Course Description
Individual study of language for conducting research involving sources written or spoken in the language. Students have to submit a proposal describing the purported research, types of sources to be analyzed, and kinds of language knowledge or skills they need to be equipped with. Consent of instructor and director of undergraduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY501S - History of Sexuality

Course Description
Explore history of sexuality around the globe, covering diverse time periods and regions. Examine methods and theories used in the study of sexuality, with attention to topics such as fertility, kinship, marriage, heterosexuality, homosexuality, birth control, sexology, and community formation.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF501S HISTORY OF SEXUALITY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY505S - When Fiction Meets History

Course Description
Investigation of key concepts along the fact/fiction & literature/history borders. Debate of their changing meanings, functions, and social significance in Francophone contexts during variety of periods, when fiction represents experimental thinking, and literature involves writing technologies. Focus on several topics: Cosmography or the Idea of the Universe, Human Passions or Love vs. Hatred, Human Relations: Dependence & Independence. Major writers/artists include Christine de Pizan, Héloïse, Abélard, Rousseau, Alain Chartier, Memmi, La Boétie, Sarraute. Work culminating in research or creative projects. Taught in English, with French preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH505S WHEN FICTION MEETS HISTORY, ROMST504S WHEN FICTION MEETS HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, WR - (WR) Writing: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

HISTORY507S - Atlantic Worlds Workshop

Course Description
This seminar explores the ties of interdependence between Europe, Africa, and the Americas that created an 'Atlantic world' beginning in the fifteenth century. Major topics include European settlement and colonization of the Americas; cultural exchanges among Europeans, Africans, and Indigenous peoples; the rise of the Atlantic slave trade and the transformative effects slavery had on Atlantic societies; the aspirations of the democratic revolutions of the late eighteenth century; and the abolition of slavery and the limits of emancipation. The course is connected to an ongoing workshop series that will give students the opportunity to regularly interact with prominent visiting scholars who will present their current research. Open to both graduate students and advanced undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
AAAS507S ATLANTIC WORLDS WORKSHOP, CULANTH507S ATLANTIC WORLDS WORKSHOP, LIT508S ATLANTIC WORLDS WORKSHOP, ICS507S ATLANTIC WORLDS WORKSHOP

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

HISTORY508S - Premodern Times: A User's Manual

Course Description
How has thinking with premodern cultures shaped criticism? Seminar explores aspects of medieval Euro-Mediterranean cultures as perennial objects of thought, investigating the ways the surviving writing and images mark key theoretical models. Inquiry proceeds by pairs of works. We debate a mode of thinking by examining critical essays with premodern works. Writers include Christine de Pizan, Alain Chartier, troubadour poets; critics such as Agamben, Boucheron, Memmi, Schlanger. Modes such as gender & sexuality; visual culture; political thought; multilingual poetics and practice. Works in translation; readings in original language and preceptorial meetings for majors/graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH530S PREMODERN TIMES, MEDREN642S PREMODERN TIMES, LIT541S PREMODERN TIMES, ROMST531S PREMODERN TIMES, ARTHIST532S PREMODERN TIMES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

HISTORY509 - Modern Intelligence History from John Buchan to James Bond

Course Description

This course examines the role of diplomatic and military intelligence in the making of policy. We will explore some of the most significant international events of the 20th century in light of the contribution of both covert and overt intelligence, focusing on the histories of several of the major 20th century intelligence organizations. The course will not be concerned with the intricacies of trade craft, but with the interplay between intelligence and policy. In our final week, we will consider the correlation between the growth of intelligence communities, their legitimization, and delegitimization, and the popular image of spying represented contemporaneously in fiction and film.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PUBPOL509 MODERN INTELLIGENCE HISTORY

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, CZ - (CZ) Civilizations

HISTORY510S - New Directions in Asian American Studies

Course Description

Reading-intensive seminar in the recent scholarship and cultural production that is pushing Asian American Studies in new directions, challenging preconceptions about the dominant narratives, geographic scope, and political assumptions in Asian American Studies. Possible topics include: imperialism, ecology, settler colonialism, disability studies, transnationalism, critical refugee studies, and feminist and queer politics. A significant portion of the course is devoted to students developing their own research projects.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AADS510S NEW DIR IN ASIAN AM STUDIES, AMES550S NEW DIR IN ASIAN AM STUDIES, GSF510S NEW DIR IN ASIAN AM STUDIES

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations

HISTORY512S - Travel Japan

Course Description

Examines the 2,000-year history of travel to, from, and within Japan. After an overview of the theory and methodologies of travel history, we take a chronological journey from the earliest surviving records of travel to Japan, through the travel literature of Japan's classical era, to travel accounts of European visitors in the 16th and 17th century, the burgeoning culture of travel in the Edo era, and the age of mass tourism in the land of the bullet train. Readings in secondary and primary sources include poetry and fiction, travel guides, diaries, maps, images, and material objects such as souvenirs and regional foods. Students will do a research project on a project of their choice.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
AMES512S TRAVEL JAPAN, EAS512S TRAVEL JAPAN, ARTHIST512S TRAVEL JAPAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY513S - Race, Class, and Gender in the University

Course Description
The American university generates some of the most influential ideas and policies on the planet. It is the product of culture-specific ideas and aspirations, as well as a long history of selective social exclusion, inclusion, and transformation. Yet most of us take for granted the culture-specific forms of reasoning, discourses, political loyalties, administrative practices, social relationships, and financial flows that constitute it. Through theoretical, historical, ethnographic, statistical, policy-oriented, novelistic, and journalistic accounts, we will de-naturalize and historicize the power/knowledge that not only forms us but also, in many ways, rules the world.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH502S THE UNIVERSITY AS A CULTURE, SOCIOL502S THE UNIVERSITY AS A CULTURE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

HISTORY514S - Culture and Environment in Modern Chinese History

Course Description
Examination of the changing patterns through which the physical environment and culture are mutually formed in late imperial and modern China. Culture includes creation of cosmological and social ideas as well as long term practices of settlement and utilization of the environment. In what ways did cultures represent limits to environmental exploitation? Special attention to how communities and the state respond to environmental disasters and explore the feedback loops for protection and prevention. Explores the importance of long-term understanding for the current environmental crisis in China.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES531S CULTURE/ENV IN MODERN CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (CZ) Civilizations, (SS) Social Sciences

HISTORY515S - Oral History Methods

Course Description
Oral History sculpts the newest tools available for practitioners of one of the most ancient of the scholarly disciplines. Using technical innovations from the 1963 portable cassette recorder to cutting edge digital tools today, oral historians co-create, archive, analyze, and share stories from people who otherwise historians might 'miss' because most people don't put their materials into archives, don't leave a written record, might not trust institutions like libraries, or plain and simple, don't have access. This course is a seminar for graduate students and advanced History Majors where we immerse ourselves in the methods, controversies, limits, and possibilities of oral history.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST515S ORAL HISTORY METHODS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research

HISTORY517S - The Latinx South: Immigration, Race, and the Nuevo South

Course Description
In the past decades many of the fastest growing Latino/a populations have been in the US South. Instead of traditional sites of immigration like Los Angeles and New York, the U.S. South has become home to a diverse group of Latino immigrants. This course examines the history of Latino/as in the U.S. South. Spanning the twentieth-century it will trace the long history of Latino/as in the South and how they experienced Jim Crow segregation, the Civil Rights Movement, white supremacy, and labor struggles. This interdisciplinary approach the study of race and region will expose students to a diverse range of texts including historical monographs, memoirs, graphic novels, and documentaries.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LSGS517S THE LATINX SOUTH

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

HISTORY520S - Microhistory

Course Description
Examines methods of micro-historical analysis, focusing on distinctive practices that define this popular form of history writing, including how to reduce the scale of analysis; interpreting clues as a 'scientific paradigm'; treating culture as action; using historical contexts and theories; identifying historical actors; and crafting historical narratives. For advanced undergraduates, graduate students from any field interested in micro-analysis, historical theory and method and story-telling. Requirements include short essays and major research paper based on primary sources from any field or period of history.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN576S MICROHISTORY

HISTORY524S - Indigenous languages and their speakers in Latin America

Course Description
In this course, students will engage in reflecting on the roles of indigenous languages and their speakers in the history, culture and literature of Latin America. Students will be immersed in a diverse corpus composed of oral narrations, historical documents, and material culture from digital archives and museums. The course will cover three geographical areas and the languages spoken in them, including: • Andes-Amazon: Quechua, Aymara, Tupi-Guarani and Matsigenka. • Mesoamerica: Nahuatl, K'iche and Zapotec • Southern cone: Mapudungun, Tehuelche and Guarani.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH525S INDIGENOUS LANG & CULT, LSGS525S INDIGENOUS LANG & CULT, LATAMER525S INDIGENOUS LANG & CULT

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

HISTORY525S - Corporate Empires

Course Description
History of corporations and companies in early modern and modern colonialism. Through case studies and independent research, students explore concepts such as the intellectual foundations of corporation theory; legal and jurisdictional pluralism in domestic and international law; state formation and its alternatives; shifting boundaries between public and private authority; the origins and evolution of the joint-stock company; the history of colonialism in the Americas, Asia, and Africa; roots of modern political economy and economic thought; debates over informal and formal forms of empire; decolonization and globalization; the modern multinational and the concept of 'corporate empires.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
I&E525S CORPORATE EMPIRES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations

HISTORY526S - Columbus: A Global History

Course Description
This seminar returns to the global framework of Columbus's encounters with what would come to be called the New World. Students will study medieval conceptions of the world in maps, cosmographies, and travel literature as well as developments in China and the Americas before 1492. Our central focus will be texts by Columbus and his contemporaries: Peter Martyr d'Anghiera, Amerigo Vespucci, Martin Waldseemüller, Bartolomé de las Casas, Peri Reis, Mehmed el-Su'udi, and Jacopo ha-Kohen. Attention will be given to slavery, colonization, evangelization, prophecy, apocalypticism, and resistance. We will also explore the economic and intellectual consequences of Columbus's voyages across time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN554S COLUMBUS: A GLOBAL HISTORY, ROMST526S COLUMBUS: A GLOBAL HISTORY, RELIGION524S COLUMBUS: A GLOBAL HISTORY, CULANTH527S COLUMBUS: A GLOBAL HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations

HISTORY528S - Greek History: Fifth through First Centuries BC

Course Description
Studies in later Greek History from the fifth through first centuries BC. Coverage within these chronological boundaries via survey, case-studies, or a combination of both. Offerings might include Fourth-century Greece, The Hellenistic World, Ptolemaic Egypt, vel sim.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST528S LATER GREEK HISTORY

HISTORY530S - Camera Asia

Course Description
Examines how the art and technology of photography have changed how we study and understand the historical past, with a focus on China, India, and Japan. Analyzes arrival of the camera as a historical event, along with photographers and studios. Evaluates ways in which the new technology was embraced, and considers how the camera reconfigured attitudes towards the body and gender relations, nation building, war, catastrophes and death.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS535S CAMERA ASIA, ICS531S CAMERA ASIA, ARTHIST535S CAMERA ASIA, PHOTO535S CAMERA ASIA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

HISTORY531S - Art and the Holocaust: Architecture, Art, and Cultural Politics during the Nazi Period

Course Description
This course will analyze the history of the genocide of the European Jews, and its connection to antisemitic art and cultural policy during the Nazi period. With a sound understanding of the development of oppressive policies against the Jews, and looking at a variety of media (painting, architecture, film, photography, design), the course will explore the complicated relationship between developing racist policies and the world war as they impacted and were in turn influenced by artists. Examines not only artists involved in the Nazi state, but also those who resisted in exile or were its victims.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST555S ART AND THE HOLOCAUST, GERMAN565S ART AND THE HOLOCAUST, JEWISHST555S ART AND THE HOLOCAUST, VMS525S ART AND THE HOLOCAUST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

HISTORY532S - Atlantic Worlds

Course Description
Atlantic Worlds examines the conditions under which a specific kind of capitalism emerges in the 21st Century. Organized through speculation and new forms of exploitation beyond the industrial workplace; in prison and military industrial complexes; where debt accrues to a growing global precariat. This new moment in a much longer history of capital is approached in several ways: one, through attention to 1492; two, the legacy of Atlantic slavery; three, current accumulation by dispossession, inclusive of land grab, ecological devastation, and violence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH530S ATLANTIC WORLDS, AAAS532S ATLANTIC WORLDS, ICS522S ATLANTIC WORLDS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum

HISTORY536S - Public History and Memory

Course Description
Course examines key themes in the theory and practice of public history, an approach to historical storytelling aimed at audiences outside the academy. Topics may include the politics and ethics of public history; memory and history; monuments and memorialization; and changing modes of presentation from traditional museums to digital platforms. Student projects will use archival and library resources and engage with historic sites and organizations.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS536S PUBLIC HISTORY & MEMORY, VMS536S PUBLIC HISTORY & MEMORY

General Education Curriculum Codes
R - (R) Research, CZ - (CZ) Civilizations

HISTORY538 - The Roman Empire

Course Description
The foundation, consolidation, and transformation of Roman rule from Augustus to Diocletian.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST536 THE ROMAN EMPIRE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

HISTORY539S - Roman History from Augustus through Late Antiquity

Course Description

Study of Roman history from Augustus to the early medieval period via survey, case-studies, or a combination of both. Offerings might include The Roman Empire, The Julio-Claudians, The Second Sophistic, The Severans, The Third-Century Crisis, Late Antiquity, vel sim.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CLST536S LATER ROMAN HISTORY

HISTORY547S - The Political Economy of Care: Sustaining Households, Communities, and Environments

Course Description

This seminar explores the ways that ideas about political economy have informed the value that societies place on various forms of care, including for non-human environments, for social and cultural practices that connect societies, and for members of those societies who are unable to care for themselves. It is connected to an ongoing working-papers seminar that forms part of the Revaluing Care in the Global Economy research project. This seminar is open to graduate students and advanced undergraduates and can serve as a capstone for History majors.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PUBPOL547S THE POLITICAL ECONOMY OF CARE

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, R - (R) Research, W - (W) Writing, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY548S - Global History of Medicine

Course Description

The study of medicine as an object of critical analysis is a rapidly growing and exciting subfield in both history and anthropology. In English-language scholarship, the biggest conceptual leaps appear in works that analyze post-colonial spaces in Africa, Asia and the Americas, and engage with—and critique—the methodological and theoretical tools of postcolonialism, poststructuralism, governmentality, subaltern studies, Science and Technology Studies (STS), and sociology of scientific knowledge (SSK). We will read and discuss recent and renowned works.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

GLHLTH548S GLOBAL HISTORY OF MEDICINE

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

HISTORY550S - Life Stories: How to Write Them, What They Mean

Course Description

Note: IN-PRISON INSTRUCTION. Learning alongside incarcerated populations can be a life-changing experience, and this is one of your few opportunities at Duke to do so. Course will be held onsite at a prison in Butner, 30 minutes from Duke. Students must be at least 21 years old, have state-issued ID, be able to pass a criminal background check, and attend a required training at the federal prison. Course itself examines history, writing, and imagination. How do we understand and connect imaginatively to the life experiences of the people who lived history rather than those who made it? The emphasis will be on the lives of relatively unknown figures such as farmers, merchants and housewives.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY553S - Urban Histories in Global, Comparative, and Historical Perspective

Course Description

This course examines the origins and growth of cities, and the role urban life has played shaping politics, culture, and society in both local and global contexts. Specific topics and subjects vary; please consult course synopsis for more detail and information.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

HISTORY554S - Contemporary Dance History

Course Description

A survey course spanning twentieth- and twenty-first-century developments in selected dance forms from around the world, including discussions of dance in its historical, political and cultural context. Readings will focus on dance as a social phenomenon; dance in the form of political activism; dance as a medium of projecting gendered identity and the historical trajectory of dance aesthetics. Discussions will also include postmodernism in dance and the impact of globalization on world dance forms. Invited guest artists.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE665S CONTEMPORARY DANCE HISTORY, ICS509S CONTEMPORARY DANCE HISTORY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (W) Writing, (ALP) Arts, Lit & Performance, (CZ) Civilizations

HISTORY557 - Cultural Memory

Course Description
Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH557 CULTURAL MEMORY, LIT557 CULTURAL MEMORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

HISTORY561S - Global Africa

Course Description
Africa's participation in globalization has not simply been a matter of 'joining the world economy.' Rather, Africa's inclusion has been selective, uneven, and partial. This is quite a different proposition than arguing, as many social theorists, economists, and journalists have suggested that the Continent is somehow structurally irrelevant to the process of globalization. This course responds to this debate by retracing the history of globalization, beginning with the Atlantic trade in human beings and concluding with an account of Africa's place in the global circulation of people things, ideas, and currencies in early twenty-first century.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS510S GLOBAL AFRICA, CULANTH561S GLOBAL AFRICA, POLSCI527S GLOBAL AFRICA, ICS510S GLOBAL AFRICA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (SS) Social Sciences

HISTORY565S - Global Critical Race Theory and History: Brazil and the USA

Course Description
Critical Race Theory emerged in US law schools in the 1980s and has inspired young scholars and activists with its focus on the systemic nature of racism entrenched within the U.S. judicial system. Yet CRT has also been relentlessly modern and focused on the U.S.A. Given varying dynamics of racial subalternization and divergent legal systems, how is one to grasp the distinctive features as well as shared similarities between systems of racial domination in the USA and Brazil, two core regions of the New World African Diaspora? More broadly, how might one encompass 'race' and 'race-like' forms of domination in other societies in light of the sweep of history over the past millennia?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST565S GLOBAL CRITICAL RACE THEORY, AAAS565S GLOBAL CRITICAL RACE THEORY, CULANTH565S GLOBAL CRITICAL RACE THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY567S - American Grand Strategy

Course Description
Study of policy that nations adopt to marshal their political, economic, military, technological, and diplomatic resources to achieve their national goals in the international environment they face, drawing on political science, history, public policy, law and political economy and other disciplines to achieve these ends. Course examines the history, current reality, and future prospects of American grand strategy. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI562S AMERICAN GRAND STRATEGY, PUBPOL501S AMERICAN GRAND STRATEGY

HISTORY572S - Anthropology and History

Course Description
Recent scholarship that combines anthropology and history, including culture history, ethnohistory, the study of mentalite, structural history, and cultural biography. The value of the concept of culture to history and the concepts of duration and event for anthropology. Prerequisite: major in history, one of the social sciences, or comparative area studies; or graduate standing.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH501S ANTHROPOLOGY AND HISTORY, ROMST521S ANTHROPOLOGY AND HISTORY

HISTORY577S - Historical and Philosophical Perspectives on Science

Course Description
An integrated introduction to the nature of science and scientific change, and its impact on society. Counts as elective for the Science & Society Certificate Program.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF541S HIST/PHIL PERSPECT ON SCIENCE, PHIL541S HIST/PHIL PERSPECT ON SCIENCE, LIT521S HIST/PHIL PERSPECT ON SCIENCE

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (CZ) Civilizations

HISTORY590 - Topics in History

Course Description

Advanced topics designed for graduate students and advanced undergraduates. Topics vary by semester.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

HISTORY590S - Topics in History Seminar

Course Description

Seminars in advanced topics designed for graduate students and advanced undergraduates. Topics vary by semester.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

HISTORY591S - Environmental (Hi)stories: History, Narrative, and Writing in Practice

Course Description

How do historians and others in the environmental humanities tell compelling stories about entanglements of places, people, and non-human worlds? How do these narrative forms shift across time and cultures? Together we will read environmental histories and other forms of nature writing for content, prose, and structure; identify narrative styles unique to the field; and examine how writers showcase individual voice. Assignments include several short-form written pieces culminating in a final essay appropriate for publication in an academic or popular forum. This seminar is for graduate students or advanced undergrads interested in learning how to read for writing and write for readers.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

HISTORY599S - Meiji Japan

Course Description

The class offers an in-depth study of the Meiji Era (1868-1912). Readings include major research publications on selected topics, which may include the Meiji Restoration, political reforms, popular protests, women's experiences, religious trends, intellectual developments, literary and visual cultures, economic development, the Sino- and Russo-Japanese wars, and more. Students have the option to undertake independent research projects.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
AMES599S MEIJI JAPAN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

HISTORY610S - Africa, Cuba, Brazil: Great Powers of the Black Atlantic

Course Description
Explores shared cultural history of three great populations separated by oceans but linked by slave trade. Course will offer lively, mutually transformative dialogue in religion, music, and political ideas. This case study in the Africanization of the Americas and the Americanization of Africa challenges a range of conventional assumptions about transnationalism, race, class, gender, and their artistic expression.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS610S AFRICA, CUBA, BRAZIL, CULANTH610S AFRICA, CUBA, BRAZIL, ROMST522S AFRICA, CUBA, BRAZIL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY611 - Biography, Life Writing, Autofiction

Course Description
History and art of the life story, examining biography as it drives research and contemporary writing. From Montaigne to Rousseau, the biopic to the lives of troubadours, we will study modes, media and social functions: portrait, caricature, meditation, fragments, selfies. The subjects: famous or anonymous people; those who are not human, landscapes, the sea—even inanimate objects. The accounts of radical change or metamorphosis, personal epiphanies, self-conscious reflection. The aims of depicting lives as they unfold. Texts include Foucault, Augustine, Flora Tristan, Pascal, Ferraoun. Critical readings will be coupled with creative work culminating in a research project around your life. Same course as French 411 but with additional graduate-level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH611 BIO, LIFE WRITING, AUTOFICTION, LIT609 BIO, LIFE WRITING, AUTOFICTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

HISTORY627 - Soviet and Post-Soviet Economic History

Course Description
This course traces economic factors leading to the downfall of the Russian Empire and the rise of the USSR, followed by an assessment of the collapse of the USSR. Particular attention is devoted to the NEP period, earlier Soviet economic models, the famine of the 1930s, the impact of the Great Patriotic War (WWII), industrialization and urbanization, Soviet planning, and declining productivity growth and life expectancy in the in the 1970s and 1980s. The course then explores the economic consequences of the USSR's collapse as well as the nature of recovery in various countries that followed. Prerequisite: Economics 201D and (Economics 208D or 204D, either of which can be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON627 SOVIET & POST-SOVIET ECON HIS, RUSSIAN627 SOVIET & POST-SOVIET ECON HIS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY627D - Soviet and Post-Soviet Economic History

Course Description
This course traces economic factors leading to the downfall of the Russian Empire and the rise of the USSR, followed by an assessment of the collapse of the USSR. Particular attention is devoted to the NEP period, earlier Soviet economic models, the famine of the 1930s, the impact of the Great Patriotic War (WWII), industrialization and urbanization, Soviet planning, and declining productivity growth and life expectancy in the in the 1970s and 1980s. The course then explores the economic consequences of the USSR's collapse as well as the nature of recovery in various countries that followed. Prerequisite: Economics 201D and (Economics 208D or 204D, either of which can be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON627D SOVIET & POST-SOVIET ECON HIS, RUSSIAN627D SOVIET & POST-SOVIET ECON HIS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

HISTORY650S - History of Mental Illness

Course Description
What is madness? Historical analysis offers a variety of answers to this question. This course will provide students with a broad introduction to the modern history of mental illness, with particular emphasis on the nineteenth and twentieth centuries. We will cover a diverse set of issues, including the disciplinary formation of psychiatry and neurology, new medical understandings of pathology, and the political assumptions and ramifications of defining and redefining madness in the North Atlantic and abroad.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT650S HISTORY OF MENTAL ILLNESS, NEUROSCI650S HISTORY OF MENTAL ILLNESS, PSY650S HISTORY OF MENTAL ILLNESS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

HISTORY651S - Theories of Violence

Course Description
Violence is a capacious concept that differs widely in terms of the context of its deployment. It can refer, for example, to expressions of state and legal authority, policing, and carceral practices; it can take on symbolic and epistemic forms in terms of processes of racialization, structures of social exclusion, and forms of bodily regulations; it can reflect the everyday enactment of personal injuries, entitlements, and power differentials; or it can designate the emancipatory force of revolutions, uprisings, and strikes. This course will attempt to explore these various facets of the concept of violence from a number of different disciplinary standpoints — including political philosophy, social theory, historical sociology, postcolonial studies, and critical race theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT651S THEORIES OF VIOLENCE, ICS524S THEORIES OF VIOLENCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

HISTORY701S - Theory and Historiography

Course Description
This seminar is required of all entering first-year doctoral candidates in history.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

HISTORY702S - Historical Method

Course Description
This seminar is required of all entering first-year doctoral candidates in history.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

HISTORY703S - Focusing on Teaching and Pedagogy

Course Description
A required course that focuses on a range of pedagogical issues, both to support student's work in the classroom as teaching assistants and to prepare them for teaching in their professional careers. Course work will culminate in the creation of a teaching portfolio. Consent of instructor required.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

HISTORY704S - Focusing on Preparing Portfolios for Preliminary Certification

Course Description
A required course, though ungraded, supporting students, most commonly in the third year, as they prepare portfolios for preliminary certification.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

HISTORY705S - Modern Jewish Thought

Course Description
The seminar offers a survey of key moments in modern Jewish thought. It deals with the challenges and opportunities that modernity presented Jewish existence, and how these were addressed by Jewish thinkers from Baruch Spinoza and Moses Mendelssohn to Emmanuel Levinas and feminist thinkers. We will discuss the relationships between continuity and break, transformation and renewal that features modern Jewish thought in relation to its medieval articulations as well as in relation to various philosophical and theological traditions, and investigate how Judaism and Jewishness are redefined by means of present-day conceptual frameworks.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION702S MODERN JEWISH THOUGHT, GERMAN702S MODERN JEWISH THOUGHT

HISTORY707 - East Asian Studies Core Course: Fields and Methods

Course Description
A graduate-level introduction to the study of East Asia. Students will survey a variety of disciplinary approaches to East Asian studies. The course will be directed by the director of graduate studies or the institute director. Units of the course will be taught by core faculty of the Asian/Pacific Studies Institute and visiting lecturers. Discipline approaches to be addressed include anthropology, art history, economics, history, literary studies, political science, religious studies, and sociology. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES700 EAST ASIAN STUDIES CORE COURSE, EAS700 EAST ASIAN STUDIES CORE COURSE, RELIGION700 EAST ASIAN STUDIES CORE COURSE

HISTORY708S - Anthropology of Contact: Contagion, Coloniality, Capital

Course Description
In this course, we will find out what an 'anthropology of contact' can do to advance a critical analysis of culture. Contact is a prerequisite for human existence, and it can also destroy existence. Across various contexts from colonial encounters to contagious disease, we will look at what bodies exchange when they exist in proximity. We will read theoretical, historical, and ethnographic texts. Topics include malaria in the Philippines; sexuality in gentrifying New York; human porosity and toxicity; and labor and liberalism in imperial exchange.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH708S ANTHROPOLOGY OF CONTACT, LIT708S ANTHROPOLOGY OF CONTACT, GSF708S ANTHROPOLOGY OF CONTACT

HISTORY710S - Politics of Nature

Course Description
This is a graduate course on the concept of 'nature' in social theory and history. Against the presupposition that social theory has traditionally lacked a conceptual engagement with nature, this class will chart the genealogies of environmental thought that have developed within and through wider transformations of twentieth-century political economy, technology, and politics. The aim of this course is to both resituate contemporary calls for a critical theory of nature that has remained largely indifferent to its own conceptual and historical antecedents; while also developing new research on the history and politics of nature in a world transformed by climate catastrophe.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
CULANTH710S POLITICS OF NATURE, ENVIRON730S POLITICS OF NATURE

HISTORY714S - The Politics of Christ

Course Description
This course follows the story of Jesus Christ from Roman Palestine to the contemporary United States. We will read the gospels in historical context before asking how contemporary moral and political thinkers have grappled with the story of Christ. Themes will include race, incarceration, feminism, and political economy. This course will be held onsite at the federal prison in Butner, NC. Students must be at least 21 years old, have state-issued ID, be able to pass a criminal background check, and attend a required training at the federal prison.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

HISTORY715 - Cultural Memory

Course Description
Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH715 CULTURAL MEMORY, ROMST715 CULTURAL MEMORY, LIT715 CULTURAL MEMORY

HISTORY718S - Baroque: Patterns of Thought, Transformation, and Accumulation in the Hispanic World

Course Description
Interlocked patterns of thought, transformation, and accumulation exploring the problem of appearances and the reality they purport to represent, leading to dynamic transformations in sovereignty, aesthetics, performance, stories, and knowledge, entangling the increasing fascination with libraries, archives, and scientific collections, with global capitalism and its racial forms. Taught in English.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH718S BAROQUE IN THE HISPANIC WORLD, LIT718S BAROQUE IN THE HISPANIC WORLD

HISTORY720S - 20th century China: Gender and the Body

Course Description
This course introduces students to recent and foundational scholarship in environmental history, gender history, and history of the body in modern China. Students read one historical monograph or multiple articles each week and complete a research paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY730S - A Cultural and Spatial Analysis of the Ghetto: Venice, Nazi Occupied Europe, Chicago

Course Description
This seminar explores the cultural and spatial history of the Ghetto. From its origins in Venice through the spread of ghettos in Nazi-occupied Europe to the segregation of African-American populations in Chicago, specific spaces have been designated as ghettos. This designation has had an impact on the social understanding of architectural form, but it has also generated many cultural responses in material culture, art, photography, film, and other media. The course will explore the cultural understanding of the ghetto with a specific emphasis on the Jewish ghettos in Nazi-occupied Europe but with a comparative look at Venice and Chicago.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST730S A CULTURAL ANALYSIS OF GHETTOS, GERMAN730S A CULTURAL ANALYSIS OF GHETTOS, JEWISHST730S A CULTURAL ANALYSIS OF GHETTOS

HISTORY731S - Oral History and Storytelling

Course Description
Explore the fields of oral history and public history by participating in a community-based project. Examine a wide variety of sources related to oral history and public history theory and practice including books, articles, digital history projects, exhibits, and guest speakers. Uncover the opportunities, challenges, and controversies associated with these fields. Use this knowledge to create public-facing dissemination of our research in collaboration with a community organization.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST730S ORAL HISTORY AND STORYTELLIN

HISTORY741S - Spaces, Bodies, and Narratives: Mapping Religion in Colonial India

Course Description
How imperial cartography, understood as the mapping of territories, human bodies, cultural practices, and oral traditions, influenced mapping of religion in colonial India. Political and personal contexts of British and Indian-authored ethnographies, folklore collections, colonial census reports, and their impact on anthropological imagining of religion in South Asia.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION882S MAPPING REL IN COLONIAL INDIA

HISTORY743 - What Machiavelli Really Says

Course Description
Everyone knows what 'Machiavellian' means, but what does Machiavelli really say? Reading his classical political texts 'The Prince,' the 'Discourses on Livy,' and 'The Art of War' in the company of his literary works, including 'Mandragola,' we will examine how Machiavelli's ideas about power, deception, language, ethics, and representation emerged from his reading of Plato, Livy, Ovid, and Dante, while also exploring the reception and consequences of his ideas. Just as Machiavelli searched history for answers to his own political situation, our guiding question cannot help but be 'What would Machiavelli do?'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN743 WHAT MACHIAVELLI REALLY SAYS, LIT743 WHAT MACHIAVELLI REALLY SAYS, POLSCI752 WHAT MACHIAVELLI REALLY SAYS

HISTORY758S - Digital Durham

Course Description
Bass Connections course. Representing Durham past and present with digital media. Digitize historical and cultural materials, research in archives and public records and present information through various forms including web pages, databases, maps, video and other media. Analysis of social impact of new representations of place and space. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC758S DIGITAL DURHAM, ISS758S DIGITAL DURHAM, EDUC758S DIGITAL DURHAM

HISTORY770 - Islamic Interconnectivities

Course Description
This course introduces various aspects of global Islamic history and historiography. It interrogates how to define, analyze, and probe the interconnectedness of Muslim societies across time. After exploring a range of theoretical and historiographic models for what scholars have referred to as a 'multi-civilizational civilization,' the 'Islamicate,' and a 'discourse-based world-system,' the course delves into thematic examinations of the transregional links and networks that have worked to connect Muslims across Afro-Eurasia.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION770 ISLAMIC INTERCONNECTIVITIES

HISTORY772S - Cross-Cultural Encounters

Course Description
The dynamics of cross-cultural interaction have actively shaped the world for many centuries now. This class explores some of the religious, social, and economic forces that have fostered increasingly global contacts in history. In particular, it examines how centrally located and cosmopolitan Muslims played a critical role in connecting people of far-flung regions, cultures, and religions with one another. It surveys the myriad encounters of Muslims, Buddhists, Confucianists, Hindus, Jews, Christians and more across Afro-Eurasia and into the Americas. How did religious networks, processes and events foster historic exchanges of ideas, practices, and commodities across the world?

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION772S CROSS-CULTURAL ENCOUNTERS

HISTORY773S - Islam, Law, and Society

Course Description
Examines the history and development of Islamic law in the context of different Muslim societies from its origins to the present. Varying course themes include ethical and legal norms, gender dynamics, social networks, commerce, governance, secularism, modernity, and more.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION773S ISLAM, LAW, AND SOCIETY

HISTORY774S - Ideology and Religion in Muslim Central Eurasia

Course Description
While Islam as a lived religion offers a common starting point to understand the experiences of Muslims in Central Eurasia, ideologies such as Islamism, positivism, nationalism, and socialism have informed the various powers that attempted to regiment their lives according to various blueprints for a future society since the nineteenth century. Thus, the minds and bodies of Central Eurasia's Muslims have been the subject of intense intellectual debates and social engineering interventions, and in their experiences, this course explores the modern interplays of religion and ideology as they have been mediated by individual or group interests, power dynamics, and mundane realities.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES774S IDEOLOGY AND ISLAM IN EURASIA, SES774S IDEOLOGY AND ISLAM IN EURASIA, RELIGION774S IDEOLOGY AND ISLAM IN EURASIA

HISTORY776S - Genealogies of Secularism

Course Description
This graduate-level seminar deeply examines the genealogies of secularism through a global and comparative historical lens. It interrogates how secularism is related to the concept of religion, from the formation and development of secularism to the policies and laws enacted by secular states. How are questions of gender equality, race, and the exercise of power connected to the practice of secularism? What is the place of religious tolerance, free speech, and minority rights in secular societies? How do secular states adjudicate questions of religion? A diverse range of case studies include Egypt, France, Turkey, the United States of America, and beyond.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION776S COMPARATIVE SECULARISM

HISTORY779 - Visualizing Cities: Representing Urban Landscapes, Cultures, and Environments

Course Description
Exploring digital and visual representation of landscapes, structures, environments, history, culture, architecture, events, and populations. Change over time, cultural heritage, possible futures, and alternate pasts from historical, cultural, documentary, and scientific evidence. Idea of city as a conceptual category and metaphor. Ubiquitous computing in urban environments/medium for interaction. Global cities and diaspora. Visual imager and written accounts. Use of mapping, imaging, 3D, augmented reality, games. The graduate version includes both the final digital project and a theoretically-informed graduate seminar paper. Topics and historical foci vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST780 VISUALIZING CITIES, ISS780 VISUALIZING CITIES, CMAC780 VISUALIZING CITIES

HISTORY780S - Teaching Race, Teaching Gender

Course Description
Interdisciplinary analyses of the problematics of teaching about social hierarchies, especially those of race, class, and gender. Curricular content and its interaction with the social constructions of students and teachers.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS780S TEACHING RACE, TEACHING GENDER, GSF780S TEACHING RACE, TEACHING GENDER, LIT780S TEACHING RACE, TEACHING GENDER

HISTORY791 - Reading Topics: Independent Study

Course Description
These courses allow for independent study on specific topics on an individual basis with instructors. Written work is confined to methodological, conceptual, or historiographic essays. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY792 - Reading Topics-Independent Study

Course Description
These courses allow for independent study on specific topics, on an individual basis with instructors. The expectation is that students will produce a substantial term paper based on research in primary sources. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY801T - Applied Historical Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on historical analysis. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, databases, oral histories, data visualizations). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY802T - Applied Historical Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on historical analysis. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, databases, oral histories, data visualizations). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

HISTORY850S - Anthropology and History

Course Description
A continuation of History 572S/Cultural Anthropology 501S. Recent scholarship that combines anthropology and history, including culture history, ethnohistory, the study of mentalite, structural history, and cultural biography. The value of the concept of culture to history and the concepts of duration and event for anthropology. Prerequisite: History 535S or Cultural Anthropology 501S.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH735S ANTHROPOLOGY AND HISTORY

HISTORY881 - Christian Manuscript Culture

Course Description
Investigating provenience & provenance of Christian manuscripts, esp. in Duke University collections. Manuscripts as windows into religious and cultural priorities of Christians from late antiquity to beyond medieval period. Books as liturgical objects; histories of transmission & reception of biblical & patristic texts; manuscripts as gifts and plunder; texts and paratexts as evidence of lived religion. Canon formation and representation, philological and aesthetic notions of 'the authentic,' and scribal and scholarly expertise as aspects of book production and circulation will also be addressed as individual manuscripts are placed within their complex historical and material contexts.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST881 CHRISTIAN MANUSCRIPT CULTURE, RELIGION885 CHRISTIAN MANUSCRIPT CULTURE

HISTORY790S-01 - Topics in European History

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of European History. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY790S-02 - Topics in Latin American History

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Latin American History. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-03 - Topics in African and Asian History

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of African and Asian History. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-04 - Topics in North American History

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of North American History. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-05 - Topics in Global Connections

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Global Connections. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-06 - Topics in Law and Society

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Law and Society. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-07 - Topics in Politics, Public Life, The State

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Politics, Public Life, The State. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-08 - Topics in Environmental History

Course Description
The department offers a series of rotating courses, covering various aspects of environmental and natural history. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
CULANTH790S-02 TOPICS IN ENVIRONMENTAL HIST, ENVIRON790S-01 TOPICS IN ENVIRONMENTAL HIST

HISTORY790S-09 - Topics in Racial Formations

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Racial Formations. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-10 - Topics in Empires and Colonial Encounters

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Empires, Colonial Encounters. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY790S-11 - Topics in Labor Systems, Capitalism, Business Cultures

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Labor Systems, Capitalism, Business Cultures. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY790S-12 - Topics in Military History, Science, Technology

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Military, Science, Technology. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

HISTORY790S-13 - Topics in Methods and Theory

Course Description
The department offers a series of rotating courses, covering the history and historiography of various aspects of Methods, Theory. Written work is confined to methodological, conceptual, or historiographic essays. Topics vary, as do the instructors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY790S-14 - Readings in Cultural History

Course Description
Students read representative 'classics' in cultural history, explore the theoretical foundations and assumptions of the works studied, unpack the various meanings of the term 'culture,' and analyze shifts in the field from the nineteenth century to the present.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY890S-04 - Research Topics in North American History

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in North American History, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY890S-05 - Research Topics in Global Connections

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in Global Connections, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY890S-06 - Research Topics in Law and Society

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in Law and Society, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY890S-07 - Research Topics in Politics, Public Life, The State

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in Politics, Public Life, The State, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY890S-08 - Research Topics in Gender

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in Gender, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY890S-09 - Research Topics in Racial Formations

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in Racial Formations, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

HISTORY890S-13 - Research Topics in Methods and Theory

Course Description
The department offers a series of rotating courses that offer students the opportunity to research and write on topics in Methods, Theory, with the expectation that students will produce a substantial term paper based on research in primary sources. Specific topics vary, as do the instructors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

HISTORY890S-14 - Research Seminar in Cultural History

Course Description
Students develop a research project in cultural history. Common readings include a series of methodological works in history, literary theory, and cultural anthropology. The focus of the class is the student's independent work that is to result in a research paper the equivalent in scope and length of a research based journal article.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI890S-14 RESEARCH SEM IN CULTURAL HIS

HLTHPOL540 - Regulation and Reimbursement of Medical Products: Practice and Policy

Course Description
The objective of the course is to give a practical overview of the current regulatory and reimbursement landscape for medical products (drugs, devices, and biologics), as well as understanding of current issues that may influence existing and/or future regulatory and reimbursement practices and policies. The focus will be primarily on US regulation and reimbursement policy, but international context will be included as appropriate. Students can expect to gain basic understanding of how drugs, devices, and biological products are tested and regulated as well as the multiple stakeholders involved in the purchase and reimbursement of medical products. Area Designator(s): GE

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME500-1 REIMBURSEMENT MED PROD

HLTHPOL582 - Global Environmental Health: Economics and Policy

Course Description
Social science perspective on global environmental health. Students will learn to identify primary environmental causes of high burden diseases such as malaria, diarrhea, and respiratory infections; describe how to measure socio-economic impacts of global environmental health diseases; discuss key policies to control global environmental health problems based on private prevention and therapeutic behaviors; and propose frameworks to empirically monitor and evaluate global environmental health policies. A sub-module will focus on climate change and water-borne diseases. Prerequisites: Introductory course in statistics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON538 ENVIRON HEALTH: ECON AND POLIC, GLHLTH538 ENVIRON HEALTH: ECON AND POLIC, PUBPOL582 ENVIRON HEALTH: ECON AND POLIC

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

HLTHPOL765S - Foundations in Interdisciplinary Health Policy

Course Description
This course encourages students to examine contemporary health policy issues from a variety of perspectives. Explores how different disciplines (e.g., economics, law, business, political science, ethics, behavioral science, history) inform the development, implementation, and analysis of health policies. Students will gain experience applying the disciplinary theories and frameworks discussed in the course to address pressing health care problems. Emphasizes critical reading and analysis skills, informed debate, flexible thinking around different perspectives, and written and verbal communication competence.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

HLTHPOL795 - Bass Connections COVID-19 Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to enter into research related to the COVID-19 pandemic. Teams may also include postdoctoral fellows and experts from business, government and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

HLTHPOL795T - Bass Connections Health Policy & Innovation Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to addressing questions related to health policy and innovation. Teams may also include postdoctoral fellows and experts from business, government and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

HLTHPOL796T - Bass Connections Health Policy & Innovation Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to addressing questions related to health policy and innovation. Teams may also include postdoctoral fellows and experts from business, government and the non-profit sector. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

HLTHPOL865S - Health Policy Innovation Lab

Course Description
Collaborative project course that centers on addressing complex health care issues through interdisciplinary, collaborative research, analysis, and communication. Students will contribute to applied, semester-long projects that bridge the classroom and health policy in action. Interdisciplinary teams will work with health care organizations focused on improving health, health equity, and the value of health care. Students will gain valuable knowledge and hands-on experience identifying, developing, evaluating, and/or implementing evidence-based policy strategies and hone teamwork, leadership, and communication skills.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

I&E510 - Social Innovation Practicum

Course Description
Students will engage with social entrepreneurs and other practitioners to learn about and support the design, development, validation, assessment, and scaling up of innovative, sustainable approaches to addressing critical social and environmental problems in Durham and around the world. For the service-learning component of the course, students will work in multidisciplinary teams to gather and analyze data, develop recommendations, formulate implementation plans, and provide other capacity-building support to clients that may include domestic and international social entrepreneurs, social enterprises, funders, public sector innovators, policy makers, and corporate social impact managers.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL511 SOCIAL INNOVATION PRACTICUM

I&E512 - Applied Product Management (Product Management 2)

Course Description
The students who are enrolled in the course only receive course credit for completion, they do not receive any compensation. There is a co-curricular component to the course where we engage students who are NOT enrolled the course and have specific technical skills to work with the enrolled students to complete technical projects. They are the ones who are paid the stipend. The two groups of students - course enrolled & co-curricular - work together but are separate groups with separate incentive/reward structures (course credit for the former, cash stipend for the latter).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

I&E525S - Corporate Empires

Course Description
History of corporations and companies in early modern and modern colonialism. Through case studies and independent research, students explore concepts such as the intellectual foundations of corporation theory; legal and jurisdictional pluralism in domestic and international law; state formation and its alternatives; shifting boundaries between public and private authority; the origins and evolution of the joint-stock company; the history of colonialism in the Americas, Asia, and Africa; roots of modern political economy and economic thought; debates over informal and formal forms of empire; decolonization and globalization; the modern multinational and the concept of 'corporate empires.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY525S CORPORATE EMPIRES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, CZ - (CZ) Civilizations

I&E545 - Design Climate I: Discover

Course Description
Over the two-semester Design Climate course sequence, student teams use Design Thinking to create triple bottom line startups to address climate challenges posed by industry professionals or faculty. In Design Climate I (fall), student teams develop business ideas by working through the first three phases of Design Thinking: stakeholder empathizing, opportunity definition, and solution ideation. The semester culminates with a pitch on the startup idea that will be further vetted in Design Climate II (spring). Through this process, students learn directly from industry professionals and cultivate capabilities in Design Thinking, entrepreneurship, project management, sustainable product development, climate fundamentals, and business competencies. For more information, visit our website at https://designclimate.duke.edu. We highly encourage students to only register if you plan on taking both Design Climate I and II.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON545 DESIGN CLIMATE I: DISCOVER, EGR545 DESIGN CLIMATE I: DISCOVER

General Education Curriculum Codes
R - (R) Research

I&E546 - Design Climate II: Develop

Course Description
Over the two-semester Design Climate sequence, student teams use design thinking to develop triple bottom line startups that address climate challenges posed by industry professionals or faculty. In Design Climate II, student teams develop their business ideas by prototyping, gathering market validation data, and developing their business model. The semester culminates in a pitch of the startup ideas to members of the entrepreneurship community. Students cultivate capabilities in design thinking, entrepreneurship, project management, sustainable product development, climate fundamentals & business competencies. Includes local field trips.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON546 DESIGN CLIMATE II: DEVELOP, EGR546 DESIGN CLIMATE II: DEVELOP

I&E579 - Climate Tech Startups and Investors

Course Description
This course provides an overview of business development in the rapidly growing climate tech sector. Through 'in the trenches' input from guest speakers (founders and investors across the U.S.) and assignments, students will learn about the climate tech landscape and become more fluent with certain business skills and tools, such as (1) market sizing, (2) investor databases, (3) competitor analysis, (4) productivity techniques, and (5) term sheets.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1.5

Max Units:
1.5

Crosslisted Courses
ENERGY579 CLIM TECH STARTUPS & INVESTORS

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

I&E590 - Special Topics in Innovation & Entrepreneurship

Course Description
Selected topics in innovation and entrepreneurship. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

I&E710 - The Business of Science: Research and Technology Translation

Course Description
Students will study the processes, factors, and strategic decisions involved in bringing a technology from the lab or research center to market – often described as 'technology commercialization' or 'technology translation.' We will examine how technologies are conceived and evaluated, the conditions enabling commercialization of the technology, factors to consider for a go-to-market strategy, and how markets, customers, and funding drive strategic choices in the path towards technology commercialization. Intellectual property, regulatory considerations, financing structures, factors in licensing/ startup decisions, and assessing market needs and competitive landscape will also be included.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

I&E711 - Commercializing Healthcare Technologies

Course Description
This is an opportunity for students to work on commercialization plans for technologies developed at Duke University, in particular in the areas of therapeutics (pharmaceuticals), diagnostics, and medical devices. They will have access to the scientist or inventor of the technology and will also work with an academic and a business mentor. Teams will be interdisciplinary, and students will gather and analyze data, develop recommendations, formulate implementation plans, and provide other capacity-building support to clients. Student teams will follow a structured process to develop a strategy and plan for the venture.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

I&E720L - Design in Healthcare 1

Course Description
The course guides students through the process of human-centered design with the goal of developing a solution to a real-world, unmet need in healthcare. Students will learn to: 1) identify unmet, underserved and unarticulated needs using human-centered qualitative contextual primary research methods such as ethnographic research; 2) apply commercial business criteria in order to select viable business opportunities; 3) use creative and research-based processes to generate and/or identify potential solutions; and 4) document their design process in accordance with regulations. The course blends taught content with practical field application and team-based project execution. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

I&E721L - Design in Healthcare 2

Course Description
The Design in Healthcare 2 course is an experiential program and continuation of Design in Healthcare 1. It requires extensive team interaction and the direct application of skills in the process of preparing a medical device technology for development and eventual commercialization. Teams work through a development strategy to determine what work will be required to bring their technology forward, and the funding requirements and timing to raise capital at key milestones. The course concludes with an investor pitch to an outside panel of seasoned CEOs, VCs, and other members of the community. Prerequisite: Innovation & Entrepreneurship 720. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

I&E722L - Design in Healthcare Deploy

Course Description

The course requires extensive team interaction and the direct application of skills in the process of preparing a medical device technology for development and eventual commercialization. Teams assess and develop a strategy for they key areas of regulatory, reimbursement, and determining an appropriate business model. Teams will then work through a development strategy to determine what work will be required to bring their technology forward, as well as the funding requirements and timing to raise capital at key milestones. The course concludes with an investor pitch to an outside panel of seasoned CEOs, VCs, and other members of the community.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

I&E745 - Narrative Design

Course Description

Students will learn to communicate why others should value their ideas and innovations, using both verbal and non-verbal elements. The first weeks of the seminar series will focus on common principles of storytelling and the ways in which stories have, historically, been the cornerstone of disseminating new ideas and information as far back as Homeric epic to as recently as Instagram and TikTok. Students will spend the remainder of the time in small groups to practice communication and design by creating and workshopping a variety of narrative materials (e.g. essay, podcast, video, presentation, etc.) related to their primary work or scholarship in another discipline.

Grading Basis

Credit / No Credit

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

I&E748 - New Ventures Discover

Course Description

This course is designed to lead you to a eureka moment by teaching you how to explore the world around you for problems worth solving. Instead of jumping directly into problem solving and solution development—which can often be wasteful without a clear understanding of a given market and customer need—this course focuses on research, exploration, and discovery. It asks students to set aside pre-conceived notions, avoiding some of their own blind spots, in order to do the necessary work of collecting data about market and learning to assess it as objectively as possible. This course is ideal for anyone who wants to excel at finding white space for new innovation and entrepreneurial action.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

I&E750 - New Ventures Develop

Course Description

Do you want to design a business model around either your own idea or someone else's problem? In New Ventures Develop you'll learn to assess opportunities, develop and test business models, understand your financials, and build successful teams. If you've validated an idea through New Ventures Discover or through your independent customer discovery process, New Ventures Develop can facilitate idea to action. In this course, student teams will develop core elements of a strategy for a technology or business idea; detail will be suitable for a business plan document for a company seeking initial investment; strategy will serve as a foundation for a first operating plan for company.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

I&E752 - New Ventures Deliver

Course Description
Did your idea pass muster in New Ventures Develop? Do you have early revenue or evidence of product market fit and want to continue to refine your go to market strategy? New Ventures Deliver is the ideal course for serious entrepreneurs ready to push themselves to take the leap. In this course you will continue to test core hypothesis while you develop a milestone driven plan for go-to-market, sales, staffing, and fundraising.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

I&E790 - Special Topics

Course Description
Selected topics in innovation and entrepreneurship. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

I&E790L - Special Topics

Course Description
Selected topics in innovation and entrepreneurship. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

I&E791 - Independent Study

Course Description
Individual non-research directed independent study in a field of special interest on a previously approved topic taken, under the supervision of a faculty member, and resulting in an academic and/or artistic product. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

I&E793 - Research Independent Study in Innovation and Entrepreneurship

Course Description
Individual research directed independent study in a field of special interest on a previously approved topic taken, under the supervision of a faculty member, and resulting in an academic and/or artistic product. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

I&E794 - Research Independent Study in Innovation and Entrepreneurship

Course Description
Individual research directed independent study in a field of special interest on a previously approved topic taken, under the supervision of a faculty member, and resulting in an academic and/or artistic product. Instructor consent required. Second semester of year-long research independent study (continuation of I&E 793: Research Independent Study).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

I&E800 - Business and Organization Fundamentals for Entrepreneurial Action

Course Description
Graduate students often have expertise in particular domains, but little business experience. Attaining business experience can take years and is often hard to navigate. Using entrepreneurship as a backdrop, this course provides a broad overview of business, including practical business fundamentals and theoretical frameworks for critical thinking. The course achieves this through theoretical frameworks, experiential education, and an analysis of competing companies. Students will experience the early stages of a typical startup, examine theoretical basis for startup success, understand managing and operating within an organization, and conduct a business analysis of competing companies.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

I&E835 - Innovations in Drug Development

Course Description
Introduction to major issues in developing a drug to treat a disease in an interdisciplinary lecture-based and team-based learning environment. Translation of principles in biomedical sciences, biomedical engineering, and chemistry along with innovative approaches to develop a hypothetical drug for treating a disease of choice. Hypothetical development of model compounds, target analysis, and in vitro and in vivo models to test drug efficacy. Course requires one of the following (or equivalent): Pharmacology and Cancer Biology 533, Chemistry 518, or Biomedical Engineering 577.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
PHARM835 INNOVATIONS-DRUG DEVELOPMENT

ICS502S - Graphic Ethnography: Comics as Research

Course Description
Comics offer researchers unique ways to portray time, memory, and speech on the page. In this course, we read global works of graphic ethnography, graphic medicine, comics journalism, and comics theory. We analyze the building blocks of the page and panel, ethics of drawn representations, and more, putting what we study into practice. The final project is a short Durham-based graphic ethnography; graduate students may, instead, integrate graphic narrative into a research project of their own. Interest in visual thinking is required, but no drawing background–comics can employ a wide array of representational strategies. Prerequisite: ICS 195, CULANTH 101D, VMS 202, or a 100-level DOCST course required for undergraduate students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
CULANTH504S GRAPHIC ETHNOGRAPHY, VMS503S GRAPHIC ETHNOGRAPHY, DOCST512S GRAPHIC ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ICS504S - The Black Radical Tradition

Course Description
Cedric Robinson's 'Black Marxism' (1983) has long been taken as foundational to the Black Radical Tradition and specifically Black people's enduring resistances to racial oppression. For Robinson such resistances have not only been legible as class struggle, but as forms of political, spiritual, artistic, intellectual opposition and underground activism. What his work has left unaddressed is the nature of such resistances in gendered terms and in terms that move beyond the United States. This course attempts to expand the definition of what is 'Black' 'Radical' and a 'Tradition' conjoining histories of struggle in South Africa and the US while attentive to their gendered sensibilities.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS503S THE BLACK RADICAL TRADITION, RELIGION503S THE BLACK RADICAL TRADITION, CULANTH503S THE BLACK RADICAL TRADITION, POLSCI589S THE BLACK RADICAL TRADITION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

ICS505S - Race in Comparative Perspective

Course Description
Comparative study of the way race is socially constructed in the United States, several European, Latin American, and other countries. The real effects of this social construction on the social and political lives of communities of color in these countries.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI505S RACE IN COMP PERSPECTIVE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (SS) Social Sciences

ICS507S - Atlantic Worlds Workshop

Course Description
This seminar explores the ties of interdependence between Europe, Africa, and the Americas that created an 'Atlantic world' beginning in the fifteenth century. Major topics include European settlement and colonization of the Americas; cultural exchanges among Europeans, Africans, and Indigenous peoples; the rise of the Atlantic slave trade and the transformative effects slavery had on Atlantic societies; the aspirations of the democratic revolutions of the late eighteenth century; and the abolition of slavery and the limits of emancipation. The course is connected to an ongoing workshop series that will give students the opportunity to regularly interact with prominent visiting scholars who will present their current research. Open to both graduate students and advanced undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
HISTORY507S ATLANTIC WORLDS WORKSHOP, AAAS507S ATLANTIC WORLDS WORKSHOP, CULANTH507S ATLANTIC WORLDS WORKSHOP, LIT508S ATLANTIC WORLDS WORKSHOP

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

ICS509S - Contemporary Dance History

Course Description
A survey course spanning twentieth- and twenty-first-century developments in selected dance forms from around the world, including discussions of dance in its historical, political and cultural context. Readings will focus on dance as a social phenomenon; dance in the form of political activism; dance as a medium of projecting gendered identity and the historical trajectory of dance aesthetics. Discussions will also include postmodernism in dance and the impact of globalization on world dance forms. Invited guest artists.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE665S CONTEMPORARY DANCE HISTORY, HISTORY554S CONTEMPORARY DANCE HISTORY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (W) Writing, (ALP) Arts, Lit & Performance, (CZ) Civilizations

ICS510S - Global Africa

Course Description
Africa's participation in globalization has not simply been a matter of 'joining the world economy.' Rather, Africa's inclusion has been selective, uneven, and partial. This is quite a different proposition than arguing, as many social theorists, economists, and journalists have suggested that the Continent is somehow structurally irrelevant to the process of globalization. This course responds to this debate by retracing the history of globalization, beginning with the Atlantic trade in human beings and concluding with an account of Africa's place in the global circulation of people things, ideas, and currencies in early twenty-first century.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS510S GLOBAL AFRICA, CULANTH561S GLOBAL AFRICA, HISTORY561S GLOBAL AFRICA, POLSCI527S GLOBAL AFRICA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (SS) Social Sciences

ICS513 - Documentary and East Asian Cultures

Course Description
Focus on documentary films from various regions in East Asia, including China, Taiwan, Korea and Japan, studying the specific historical and social context of each while attending to their interconnected histories and cultures. Emphasis on the ethical implications of documentary in terms of its deployment of visual-audio apparatus to represent different groups of people and beliefs, values and conflicts, both intra- and inter-regionally in East Asia. Special attention paid to the aesthetics and politics of the documentary form in terms of both its production of meanings and contexts of reception.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES511 DOCUMENTARY/EAST ASIAN CULTURE, DOCST511 DOCUMENTARY/EAST ASIAN CULTURE, CINE511 DOCUMENTARY/EAST ASIAN CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ICS514S - Assisting Development

Course Description
Examines evolution of international development theory and practice since early 1950s. Investigates how different solutions advanced to deal with poverty have fared. Different streams of academic and policy literature, including economics, political science, and sociology, are consulted with a view to understanding what could have been done in the past and what should be done at the present time. Examines alternative formulations weekly in seminar format. Individual research papers (60% of grade) which analyze past and present development practices in a country of their choice, or examine trends within a particular sector (e.g., agriculture, population, gender relations, the environment).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL515S ASSISTING DEVELOPMENT, POLSCI546S ASSISTING DEVELOPMENT

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ICS521S - Black Ethnographers

Course Description
What is ethnography, broadly defined? How is a scholar's ethnographic product shaped by their racialized experience? We will use books, articles, podcasts, documentaries, music, dance, and poetry for an in-depth study of the various ways that U.S.-based Black intellectuals in the social sciences have used ethnography to make sense of and theorize our and their everyday social worlds. We will pay special attention to questions of sexism, anti-Black racism, white supremacy, and colonialism, as these become relevant to the scholars' work, relationships to their disciplinary homes, and lived experiences.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH521S BLACK ETHNOGRAPHERS, AAAS521S BLACK ETHNOGRAPHERS, GSF521S BLACK ETHNOGRAPHERS, SOCIOL521S BLACK ETHNOGRAPHERS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

ICS522S - Atlantic Worlds

Course Description
Atlantic Worlds examines the conditions under which a specific kind of capitalism emerges in the 21st Century. Organized through speculation and new forms of exploitation beyond the industrial workplace; in prison and military industrial complexes; where debt accrues to a growing global precariat. This new moment in a much longer history of capital is approached in several ways: one, through attention to 1492; two, the legacy of Atlantic slavery; three, current accumulation by dispossession, inclusive of land grab, ecological devastation, and violence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH530S ATLANTIC WORLDS, AAAS532S ATLANTIC WORLDS, HISTORY532S ATLANTIC WORLDS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum

ICS524S - Theories of Violence

Course Description
Violence is a capacious concept that differs widely in terms of the context of its deployment. It can refer, for example, to expressions of state and legal authority, policing, and carceral practices; it can take on symbolic and epistemic forms in terms of processes of racialization, structures of social exclusion, and forms of bodily regulations; it can reflect the everyday enactment of personal injuries, entitlements, and power differentials; or it can designate the emancipatory force of revolutions, uprisings, and strikes. This course will attempt to explore these various facets of the concept of violence from a number of different disciplinary standpoints — including political philosophy, social theory, historical sociology, postcolonial studies, and critical race theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT651S THEORIES OF VIOLENCE, HISTORY651S THEORIES OF VIOLENCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

ICS525S - Culture, Power, History

Course Description
Debates in cultural theory and anthropology: identity and nationalism, memory and tradition, globalization, and poststructuralist, feminist and postcolonial theory. Some previous coursework in anthropology and or cultural theory recommended.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH525S CULTURE, POWER, HISTORY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (SS) Social Sciences

ICS526S - Crafting Ethnography

Course Description
This seminar examines the status of ethnography as both research endeavor and narrative craft. Ethnography is at a crossroads: it both continues to be debated as cultural anthropology's 'signature' method of inquiry, and yet also is increasingly in demand as a worldview applicable to many other disciplines and professions. If ethnography is in a moment of continual experimentation, what then structures its craft?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH529S CRAFTING ETHNOGRAPHY, GSF526S CRAFTING ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

ICS531S - Camera Asia

Course Description

Examines how the art and technology of photography have changed how we study and understand the historical past, with a focus on China, India, and Japan. Analyzes arrival of the camera as a historical event, along with photographers and studios. Evaluates ways in which the new technology was embraced, and considers how the camera reconfigured attitudes towards the body and gender relations, nation building, war, catastrophes and death.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

VMS535S CAMERA ASIA, HISTORY530S CAMERA ASIA, ARTHIST535S CAMERA ASIA, PHOTO535S CAMERA ASIA

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ICS541S - Jews and the End of Theory

Course Description

Examines role played by the figure of 'the Jew' (or 'Jews') in critical theory. Assesses role played by Jewish 'giants' in shaping critical theory. Explores role played by images of Jews and Jewishness in linguistic turn of 20th century theory. Asks how should one understand contemporary theory in relation to 'Jews'—literal Jews and figurative Jews, whether demise of these intellectual giants and diminishing interest in 'Jews' and 'Jewishness' means 'the end of theory', and how to conceive the relations between theory and 'Jewish Studies' in light of these questions.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AMES541S JEWS AND THE END OF THEORY, JEWISHST541S JEWS AND THE END OF THEORY, LIT580S JEWS AND THE END OF THEORY

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ICS568S - Imagining the Global South: The Politics and Praxis of Dreaming

Course Description

Dreaming, imagining, hallucinating are at the heart of how new ways of being and living in the world come about. Through closely reading the ways imagination works as politics and in politics, as theory and as practice in the lives of people in the Global South, this class asks just what is manifested through imagined pasts and futures. Grounded in theory, history and ethnographic spaces, students will challenge the limits of their own imaginations and explore what it might mean when we are really able to dream/hallucinate different version of the worlds we think we live in and the bodies we are told to inhabit.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
CULANTH568S IMAGINING THE GLOBAL SOUTH

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

ICS577 - Environmental Politics

Course Description
Environmental policy formation and implementation. Topics include interest groups, environmental movements and parties, public opinion, political systems and institutions.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON577 ENVIRONMENTAL POLITICS, PUBPOL577 ENVIRONMENTAL POLITICS

General Education Curriculum Codes
SS - (SS) Social Sciences

ICS590 - Special Topics in International Comparative Studies

Course Description
Topics vary from semester to semester, focusing either on specific world regions or particular comparative/global issues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ICS590S - Topics in International Comparative Studies

Course Description
Topics vary, focusing on either specific global regions or particular comparative/transnational issues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

ICS591 - Independent Study

Course Description
Students will work closely with the instructor on completing an independent study.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

ICS598 - Economic Growth and Development Policy

Course Description
Basic principles and policy issues in the study of economic growth and development. The roles of physical, natural and human capital, technological innovation, productivity improvements, history and institutions in explaining patters and causes of variations in growth and developmental performance of countries. Effects on growth, development, wellbeing and poverty levels of many current policy issues including HIV/AIDS, financial crises, macro-stability, foreign aid and investment, debt burdens and forgiveness, governance and corruption.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL598 ECON GROWTH & DEV POLICY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (W) Writing, (SS) Social Sciences

ICS605 - East Asian Cultural Studies

Course Description
East Asia as a historical and geographical category of knowledge emerging within the various processes of global movements (imperialism, colonialism, economic regionalism).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES605 EAST ASIAN CULTURAL ST, CULANTH605 EAST ASIAN CULTURAL ST, LIT571 EAST ASIAN CULTURAL ST

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

ICS613S - Third Cinema

Course Description
Exploration of the geopolitics of situatedness and distance as they refer to the film industry, investigating processes of production, distribution, and reception of Hollywood, Third World, and diasporic films, and studying classical and artisanal modes of production in film. Addresses questions of authorship and embodiment; human rights and interventionist filmmaking as they refer themselves to human states of liminality, global movements of populations and capital. Traces the experience of globalization, urbanization, alienation, violence, nostalgia for nature and homeland as represented in the filmic image.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS530S THIRD CINEMA, LIT613S THIRD CINEMA, LATAMER613S THIRD CINEMA, VMS611S THIRD CINEMA, CINE644S THIRD CINEMA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance, (SS) Social Sciences

ICS646S - Strategic Storytelling: Narratives for Development

Course Description
With a broad array of storytelling mediums, we ask how 'sticky' stories told about poverty or development strategically can add to our ability properly to understand poverty and to conduct appropriate development policies more effectively. What are the benefits and limitations of considering public policy problems by entering through the arts of storytelling and of storylistening? How do stories help readers/listeners become alive to ethical and cultural considerations previously unseen or unheard? How might these stories enable storytellers to tell stories on their own terms, opening up new and critically important terrains for public policy? Soft power strategy. Guest practitioners.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ETHICS646S STRATEGIC STORYTELLING, PUBPOL646S STRATEGIC STORYTELLING

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (SS) Social Sciences

ICS647 - Surviving Globalization: The Global South and the Development Imagination

Course Description
Global Change entails a multiplicity of environmental, social, economic, political and cultural factors that create challenges for development. The Global South, a vital area of the world, has been entangled in this vortex of global change as both catalyst and conductor of an emergent globalizing modernity. The progress of globalization seems beset by multiple stressors, ranging from financial crises and global recession, to climate change, state and non-state conflicts, free ranging terrorist aggression, and global health scares. What are the odds then of surviving globalization? What role do our imaginations of development play in either creating crises or effectively responding to them? This course is the same as African & African American Studies 409 but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS646 SURVIVING GLOBALIZATION, SOCIOL647 SURVIVING GLOBALIZATION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

ICS791 - Special Readings in International Comparative Studies

Course Description
Supervision and guidance of selected readings at an advanced level.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

IDS583 - Introduction to Data Science and Quantitative Methods in Risk Management

Course Description
Introduction to risk management practices in Finance. Students will learn various forms of risks facing a financial institution, including market risk, credit risk, and operational risks, etc. Class discusses how data science and quantitative methods are used to model and measure these risks to make optimal management decisions. The course will involve case studies of failures of large financial institutions. Important focus on ways to manage and hedge risks using derivatives. Introduction to financial products and derivatives, including options, futures, and swaps, etc.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH583 DERIVATIVES & RISK MANAGEMENT

General Education Curriculum Codes
QS - (QS) Quantitative Studies

IDS586 - Data Science and Decision Optimization in Banking & Financial Services

Course Description
Course teaches students how to apply machine learning and artificial intelligence techniques, traditional statistical modeling skills, decision optimization methods, and economic and financial theory to perform quantitative analysis, develop models, and optimize decisions in the banking and financial services industries. It prepares students for quantitative finance careers in wealth management, consumer lending, commercial banking, risk management, and CCAR stress testing. In addition to rigorous academic training, students also gain practical experience through case studies and develop a showcase project with the support of financial industry experts.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH586 DATA SCIENCE IN BANKING

General Education Curriculum Codes
QS - (QS) Quantitative Studies

IDS587 - Introduction to Financial Time Series Analysis

Course Description
Course covers methods and techniques for estimating and forecasting time series in financial markets, banking, and financial services. Main topics covered include discrete stochastic processes, ARIMA, GARCH, cross-section time-series (CSTS), error correction model (ECM), vector autoregression (VAR), hazard rate and competing risk, Markov transition, and asymptotic single risk factor (ASRF) model. Examples of applications include estimating trading volume and security prices, forecasting default and payment rates, modeling the term structure, estimating bid and ask spreads, forecasting business volume and revenue, and predicting business variables based on macroeconomic variables.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH587 FINANCIAL TIME SERIES

General Education Curriculum Codes
QS - (QS) Quantitative Studies

IDS590 - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Individual semester offerings may require prerequisites or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS590S - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Individual semester offerings may require prerequisites or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS599 - Impacts of Large Language Models on Finance Business Models and Work

Course Description
Since the introduction of ChatGPT, the world has been swept by the generative AI wave. While LLM is still in the early stages of deployment, they have shown great potential to transform our work with significant productivity gains. At the same time, it poses significant risks and dislocations of many jobs. Like many technology shocks came before it, generative AI will create winners and losers, depending on how we individually adapt to the change. The purpose of this course is to explore these potentials and risks for banking and finance careers. The key learning objective is to equip students with a basic knowledge of the underlying technology, that is, the Large Language Model (LLM). Recommended prerequisite: Programing Skills: Good working understanding of Python programming. Preferably have taken class such as CS 101, or Math 281L or Math 260L or willingness to self-learn. Finance Knowledge: While formal knowledge gained through a credited course is not required, some general knowledge about finance and financial markets is beneficial. Regardless, intellectual curiosity and independent study habits are strongly desired.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, QS - (QS) Quantitative Studies

IDS690 - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Individual semester offerings may require prerequisites or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS690S - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Individual semester offerings may require prerequisites or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS693 - Independent Study

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic product. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

IDS701 - Solving Real Problems with Data Science

Course Description
The hardest part of most data science classes is often model fitting, but the hardest part of being an effective data science professional is understanding your stakeholder's problem, fitting the right model for the problem being solved, and communicating findings. This class fills the gap between neatly curated classroom exercises and the messiness of the real world. It provides a unified perspective on how the material learned in other courses complements one another, and when different approaches to data science are most appropriate to use. It provides a framework for understanding your goals as a data scientist, and how to achieve them. Assumes familiarity with introductory statistical inference and machine learning, covers but does not assume familiarity with causal inference.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

IDS702 - Modeling and Representation of Data

Course Description
Extract actionable insights and draw inference from real world datasets. Methods for dealing with outliers and missing data, data that does not conform to standard modeling assumptions, data representations and particularly time series data analysis. Principles of causal inference and common frameworks for analysis. Develop critical thinking about issues that affect the success of models in data science. This course will lay the foundation for more in-depth study into statistical techniques for practical data analysis. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

IDS703 - Introduction to Natural Language Processing

Course Description
Introduction to the rich opportunities for using textual data produced by websites, social media platforms, digitization of administrative and historical records, and new monitoring technologies to gain insights and make decisions. Accessing textual data through web scraping and application programming interfaces (APIs), preparing these data for analysis, applying modern natural language processing (NLP) techniques, parsing unstructured text using regular expressions implementing end-to-end NLP. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

IDS704 - Data Science Ethics and Policy

Course Description
Data science tools are not morally neutral. This course is designed to help students think explicitly about their social responsibility as data scientists and the impact on the world of what they are building and analyzing. Using contemporary case studies from recent news stories and legal cases, students will learn about issues such as intellectual copyright, consent, data security, differences between privacy and confidentiality, difficulties of anonymization, and bias in artificial intelligence. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

IDS705 - Principles of Machine Learning

Course Description
Automating prediction and decision-making based on data and past experience. Students will learn how and when to apply supervised, unsupervised, and reinforcement learning techniques, and how to evaluate performance. Common pitfalls such as overfitting and data leakage will be explored and how they can be avoided. Topics include model flexibility and regularization; common supervised learning models and ensembles; performance evaluation techniques; dimensionality reduction; clustering; and the fundamentals of reinforcement learning. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

IDS706 - Data Engineering Systems

Course Description
Data Engineering Systems is a course about data and how to manage and build systems. Divided into two halves, part 1 focuses on Relational Databases. These systems are the most common type of database used today and are found in applications ranging from holding cell phone contact lists (both Android and iOS use SQLlite3 internally) to managing every aspect of a large bank or insurance company. The second half is dedicated to the concept that a one size database solution doesn't fit anyone. Concepts covered include data lakes, serverless data engineering and NoSQL databases which are part of how cloud-native technologies are used to perform data engineering, MLOps, and Cloud Architecture. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

IDS707 - Data Visualization and Storytelling

Course Description
Principles of communicating the implications of a data analysis. Students will cultivate the ability to think critically and skeptically about the questions they need to answer in a data project and the strategies they are using to answer them. Students will learn the principles behind effective data visualization and how to implement them in real analyses using Tableau software. Finally, students will practice presenting the results of a data analysis to diverse target audiences. This course serves as the foundation for the second year Capstone Project. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

IDS720 - Practicing Data Science: Tools

Course Description
This course will provide students with extensive hands-on experience manipulating real (often messy, error ridden, and poorly documented) data using the a range of bread-and-butter data science tools (like the command line, git, python (especially numpy and pandas), jupyter notebooks, and more). The goal of these exercises is to ensure students are comfortable working with data in most any form. Open only to Interdisciplinary Data Science students. Instructor consent required for all other students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

IDS721 - Data Analysis at Scale in Cloud

Course Description
This course is designed to give students a comprehensive view of cloud computing including Big Data and Machine Learning. A variety of learning resources will be used including interactive labs on Cloud Platforms (Google, AWS, Azure). This is a project-based course with extensive hands-on assignments. Open to MIDS students. Prerequisite: ECE students: ECE 580 or ECE 681. All other students will require instructor consent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS789 - Fundamentals of Finance Business Models for Students in Math and Data Science

Course Description
This course provides an overview of the business models of the financial services industry - banking, asset management, and insurance. Key learning objectives include: broad understanding of how business operates in various financial industries such as source of revenues and expenses, and how quantitative skills and knowledge are applied. Focus will be on case studies, class projects and industry speakers. The course will help students decide if Finance in general is a good match with their skills and interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
MATH789 FUND FINANCE BUSINESS MODELS

IDS790 - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Check individual semester offerings for additional prerequisites. Instructor permission usually an option.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

IDS790S - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Check individual semester offerings for prerequisites. Instructor consent may be required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS791 - Data Science Dialogues

Course Description
A series of discussions that give students snapshots of data science projects from practitioners and researchers. Students will hear from speakers from academia, industry, government, and nonprofits who discuss their career paths and share personal experiences about their most rewarding projects, the impact of stakeholders on their projects, the challenges of data collection and analysis, the differences between data science in startups and established companies, and the work cultures in different fields. Open only to Interdisciplinary Data Science students.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0.5

Max Units:
0.5

IDS793 - Independent Study

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic product. Consent of instructor and director of graduate studies required. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

IDS794 - Independent Study

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic product. Consent of instructor and director of graduate studies required. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
3

IDS798 - Capstone Project

Course Description
The goal for this year-long capstone is for students to be integrated into world-class interdisciplinary research projects that can solve real-life problems and be significantly advanced through data science. Guided by a faculty advisor, each student will work with a client (e.g. a company, government agency, or nonprofit) on this research project. The project will provide opportunities to hone students' teamwork, project management, creative problem solving, and communication skills as they apply and further develop their data science expertise. The final deliverables will be evaluated by faculty and relevant stakeholders. Open only to Interdisciplinary Data Science students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS890 - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Check individual semester offerings for prerequisites. Instructor consent may be required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS890S - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Check individual semester offerings for prerequisites. Instructor consent may be required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS898 - Master in Interdisciplinary Data Science Workshop

Course Description
A series of discussions and workshops for all MIDS students that help them develop the project management, communication, and analytical skills needed to succeed in their professional careers.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0.5

Max Units:
0.5

IDS899 - Internship in Interdisciplinary Data Science

Course Description
Student gains practical experience by taking an internship in industry/government and writes a report about the experience. Requires prior consent from the student's advisor and from the Director of Graduate Studies. May be repeated with consent of the advisor and the Director of Graduate Studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

IDS990 - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Check individual semester offerings for prerequisites. Instructor consent may be required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IDS990S - Special Topics in Interdisciplinary Data Science

Course Description
Topics vary by semester. Check individual semester offerings for prerequisites. Instructor consent may be required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

IMMUNOL544 - Principles of Immunology

Course Description
An introduction to the molecular and cellular basis of the immune response. Topics include anatomy of the lymphoid system, lymphocyte biology, antigen-antibody interactions, humoral and cellular effector mechanisms, and control of immune responses. Recommended prerequisite: Biology 220, 201L, or 203L.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY515 PRINCIPLES OF IMMUNOLOGY

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences

IMMUNOL552 - Virology

Course Description
Molecular biology of mammalian viruses, with emphasis on mechanisms of replication, virus-host interactions, viral pathogenicity, and the relationship of virus infection to neoplasia.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MGM552 VIROLOGY

IMMUNOL601 - Immunology of Human Diseases

Course Description
This advanced course will cover the immune aspect of various human diseases including autoimmune diseases, allergy, tumor, inflammation and infectious diseases. The course will discuss the most recent advancement in immunology of human diseases related to mechanisms and treatments. Prerequisite: Immunology 544 or Biology 515. Other basic immunology course taken at another institution may be substituted by consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

IMMUNOL686S - Principles of Neuroimmunology

Course Description
Bidirectional communication between the brain and immune system, in disease and during normal function/homeostasis. Historical foundations of the field in disorders such as multiple sclerosis and HIV; the anatomy of CNS-immune connections; blood-brain-barrier function and dysfunction; leukocyte trafficking, surveillance, and infiltration of the CNS; cellular players including peripheral vs. CNS-resident immune cells and antigen presentation; neuroinflammation and neurodegenerative disease; recent literature highlighting the critical role of immune molecules in neural development and lifelong plasticity. Instructor consent required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY686S PRINCIPLES OF NEUROIMMUNOLOGY, NEUROSCI686S PRINCIPLES OF NEUROIMMUNOLOGY, NEUROBIO686S PRINCIPLES OF NEUROIMMUNOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

IMMUNOL701D - Pillars of Immunology

Course Description
This course will cover discoveries of historical importance in the field of immunology through student presentations and discussions of classical papers. Intended for students seeking a PhD in immunology.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

IMMUNOL731S - Immunology Seminar

Course Description
Work in progress seminar in which students and postdoctoral trainees give 30 min to 1 hour presentations of their research. Considered a showcase of current research in the Department of Immunology. All students enrolled in IMM programs are required to give a presentation once per year. Informal questions and discussion are encouraged throughout presentation. First and second year Immunology graduate students should register for Immunology 731S which is graded credit. Third through sixth year Immunology students, along with non-Immunology majors should register for Immunology 732S which is non-graded credit. Attendance is essential for both spring and fall terms. Permission of instructor is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

IMMUNOL732S - Immunology Seminar

Course Description
Work in progress seminar in which students and postdoctoral trainees give 30min to 1 hour presentations of their research. Considered a showcase of current research in the Department of Immunology. All students enrolled in IMM programs are required to give a presentation once per year. Informal questions and discussion are encouraged throughout presentation. First and second year Immunology graduate students should register for Immunology 731S for graded credit. Third through sixth year Immunology students, along with non-Immunology majors should register for Immunology 732S which is non-graded credit. Attendance is essential for both spring and fall terms. Permission of instructor is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

IMMUNOL735 - Topics in Immunology

Course Description
Focus on current immunology research, emphasizing emerging research areas and new directions in established areas. Students present recent papers in selected subjects. This course is required for all Immunology graduate students starting the second semester of their first year. Credit/no credit grading only. Permission is required by instructor.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

IMMUNOL736 - Topics in Immunology

Course Description
Focus on current immunology research, emphasizing emerging research areas and new directions in establishment areas. Students present recent papers in selected subjects. This course is required for all Immunology graduate students starting the second semester of their first year. Credit/No Credit grading only. Permission is required by instructor.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

IMMUNOL791A - Research in Immunology

Course Description

This independent study is the first of two research experiences for first year students enrolled in the Immunology graduate program. This course is designed to introduce bench work in immunology and to expose students to a variety of techniques to increase their proficiency. Research will be conducted in training faculty laboratories. Students are generally expected to complete three rotations (but no less than two) in their first year. Enrollment in IMMUNOL 791B, offered in the spring, is required for grades to post for this course

Grading Basis

Graded

Units

Min Units:

2

Max Units:

2

IMMUNOL791B - Research in Immunology

Course Description

This independent study is the second of two research experiences for first year students enrolled in the Immunology graduate program. This course is designed to introduce bench work in immunology and to expose students to a variety of techniques to increase their proficiency. Research will be conducted in training faculty laboratories. Students are generally expected to complete three rotations (but no less than two) in their first year. Prerequisite: Immunology 791A

Grading Basis

Graded

Units

Min Units:

2

Max Units:

2

IMMUNOL800 - Comprehensive Immunology

Course Description

An intensive course in the biology of the immune system and the structure and function of its component parts. Major topics discussed are: lymphocyte development; molecular structure and genetic organization of immunoglobulins, histocompatibility antigens, and T-cell receptor; antigen receptor signaling; properties of antigens; inflammation and nonspecific effector mechanisms; cellular interactions and soluble mediators in lymphocyte activation, replication, and differentiation; regulation of immune responses. Required course for students specializing in immunology. Consent of instructor required. Prerequisite: recommended, Immunology 544 or equivalent.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

ISS520S - Ghostly Statistics: Revenge Tragedies and Natural Language Processing

Course Description

An introduction to the study of Renaissance revenge tragedies using traditional literary methodologies alongside computational tools. The course readings include foundational classical texts that define the genre of tragedy, some of the most important authors of revenge tragedies—from Marlowe to Webster—and modern philosophical accounts of revenge and justice. The computational approach covers the mathematical concepts of linear algebra and statistics used in Natural Language processing, with applications in Python, with a goal of developing a working intuition of how language models work. No mathematical prerequisites and no prior familiarity with Renaissance literature necessary.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
CMAC520S GHOSTLY STATISTICS, MEDREN600S GHOSTLY STATISTICS

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, QS - (QS) Quantitative Studies

ISS536S - Public History and Memory

Course Description
Course examines key themes in the theory and practice of public history, an approach to historical storytelling aimed at audiences outside the academy. Topics may include the politics and ethics of public history; memory and history; monuments and memorialization; and changing modes of presentation from traditional museums to digital platforms. Student projects will use archival and library resources and engage with historic sites and organizations.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS536S PUBLIC HISTORY & MEMORY, HISTORY536S PUBLIC HISTORY & MEMORY

General Education Curriculum Codes
R - (R) Research, CZ - (CZ) Civilizations

ISS544L - Introduction to Digital Archaeology

Course Description
Course studies the radical changes that new methodologies and technologies have wrought in archaeology. Remote sensing technologies, digital tools, virtual reality systems for data recording, documentation, simulation and communication of archaeological data have profoundly changed archaeological field operations. Course surveys the state of the art in: techniques of digital recording and digital documentation; GIS and remote sensing; international case studies in digital archaeology; virtual reality and virtual simulation; Web and digital publications.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST547L DIGITAL ARCHAEOLOGY, CLST544L DIGITAL ARCHAEOLOGY

General Education Curriculum Codes
(R) Research, (STS) Sci, Tech, and Society, (CZ) Civilizations

ISS550SL - Digital Publishing: Concepts and Practice

Course Description
Seminar cultivating theoretical, critical, and historical understanding of scholarly publishing through study of contemporary digital publishing and related issues in the digital humanities. Themes include markers of authorship and authority; contextual influences on interpretation; theories of audience. Hands-on work researching and building an openly accessible, web-based scholarly resource. Guest lecturers providing insight into current legal, technical, and ethical issues in digital publishing. Theoretical readings; analysis, critique, and reflection assignments; team-based discussion and collaboration; ongoing application to individual student projects.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL550SL DIGITAL PUBLISHING

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

ISS551SL - Advanced Digital Art History: New Representational Technologies

Course Description
Development of research projects in art history, visual studies and material culture expressed by using new technologies to record and communicate complex sets of humanities data from various primary sources. Introduces techniques for the digital presentation and analysis of visual material through a series of interpretative technologies, including the development of web applications; data visualization and analysis; project documentation; and/or database modeling, construction & management. No prior experience with the above is expected. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST551SL ADVANCED DIGITAL ART HISTORY, VMS551SL ADVANCED DIGITAL ART HISTORY

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ISS554 - Privacy, Technology and National Security

Course Description
Course explores the impact of new and developing surveillance and data collection technologies on personal privacy and individual liberty. In-depth examination of conceptions of privacy and the extent to which privacy rights are protected by the Constitution, statutory law, and policy. Examines how government surveillance expanded during the post-World War II period, the abuses uncovered by the Church Committee in the 1970s, new expansions of government surveillance powers after 9/11, and the programs revealed by Edward Snowden in 2011. Explores how data collection and analysis by big tech companies impact personal privacy and consider the need for regulation of these companies' activities.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL550 PRIVACY TECHNOLOGY & NAT SEC, POLSCI554 PRIVACY TECHNOLOGY & NAT SEC

General Education Curriculum Codes
(EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (SS) Social Sciences

ISS555S - Physical Computing

Course Description
Seminar in physical computing, creative coding, and the emerging artistic possibilities of the Internet of Things. Emphasis on the medial physicality of computation, and exploration of interfaces to the computational that depart from the keyboard, mouse, and screen. Discussion of the social implications of 'smart' objects. Hands-on development of individual and group projects using Arduino, an extension of C/C++, internet-enabled microprocessors, and an array of analog and digital sensors and actuators. Topics also include networking, communication protocols, circuit design, and physical prototyping.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS564S PHYSICAL COMPUTING, ARTSVIS564S PHYSICAL COMPUTING, CMAC564S PHYSICAL COMPUTING

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, QS - (QS) Quantitative Studies

ISS565S - New Media, Memory, and the Visual Archive

Course Description
Explores impact of new media on the nature of archives as technologies of cultural memory and knowledge production. Sustained engagement with major theorists of the archive through the optics of 'media specificity' and the analytical resources of visual studies. Themes include: storage capacity of media; database as cultural form; body as archive; new media and the documentation of 'everyday life;' memory, counter-memory, and the politics of the archive; archival materiality and digital ephemerality. Primary focus on visual artifacts (image, moving image) with consideration of the role of other sensory modalities in the construction of individual, institutional and collective memory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS565S NEW MEDIA, MEMORY, AND ARCHIVE, CMAC565S NEW MEDIA, MEMORY, AND ARCHIVE

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

ISS575S - Generative Media Authorship - Music, Text & Image

Course Description
Covers Generative Media in all its forms. Lectures, workshops, discussions, one semester-length project, shorter individual exercises and readings. Interdisciplinary Graduate Seminar with advanced undergraduates and MFA students with permission of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS575S GENERATIVE MEDIA AUTHORSHIP, VMS575S GENERATIVE MEDIA AUTHORSHIP, MUSIC575S GENERATIVE MEDIA AUTHORSHIP, CMAC575S GENERATIVE MEDIA AUTHORSHIP

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

ISS576S - Theory & Aesthetics: Roland Barthes

Course Description
How do philosophers read and make sense of literary texts, movies, works of art and other philosophers? This course elucidates key conceptual and hermeneutic articulations under girding a philosophical signature and delineate the status of aesthetic objects in theory. It explores Roland Barthes' thought through 4 of his key theoretical moves: death of the author, reality effect, punctum, the neutre and the ground upon which he deployed them: the realist novel, techniques of cinema & photography, political antagonism, queer subjectivity. Texts to be read in English translation; students encouraged to consult the French originals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT576S THEORY & AESTHETICS, ROMST576S THEORY & AESTHETICS, VMS576S THEORY & AESTHETICS

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ISS580S - Proseminar 1: Interdisciplinary Digital Humanities

Course Description
Multimodal interdisciplinary digital humanities in theory and practice. Research, cultural heritage applications, public outreach. Theoretical and critical perspectives on humanities texts, data, images and other media; archives and exhibitions; visualization; museums; digital mapping and timelines; immersive and interactive media systems; apps and installations. Project-based critique, hands-on exercises, project management, and reflective writing. Interaction with Smith Media Labs projects and collaborators. Attention to digital divides, access and equity issues, global media contexts, sustainability, evaluation best practices, and obsolescence/EOL considerations for digital projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS580S DIGITAL HUMANITIES PROSEM 1, ARTHIST580S DIGITAL HUMANITIES PROSEM 1, CMAC580S DIGITAL HUMANITIES PROSEM 1

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ISS581S - Proseminar 2: Critical Approaches to Computational Media Practice

Course Description
Core studio practice-based course for advanced computational methods; emphasis on development of individual artistic and/or digital research practice through prototyping and critique. Introduction to key paradigms for computational practice that can inflect a variety of creative and scholarly avenues, from experimental documentary to digital art history to generative and algorithmic approaches to digital, physical and interactive media. Specific topics may vary.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS581S COMPUTATIONAL MEDIA PROSEM 2, ARTHIST581S COMPUTATIONAL MEDIA PROSEM 2, CMAC581S COMPUTATIONAL MEDIA PROSEM 2

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ISS586 - Human-Centered Security and Privacy

Course Description
This course will introduce several security and privacy topics that have strong human factors component. Some of the themes that we cover throughout this course include overview of User Research Methods and Ethics, Equity and Inclusivity in Security and Privacy, Challenges In Designing Usable Security and Privacy Tools, Security and Privacy Education and Awareness, and Human-Centered Security and Privacy in Emerging Technologies. This course includes weekly reading commentaries, a midterm exam, and a final group research project. Recommended prerequisite: user research methods and CompSci 201 or equivalent programming experience.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI586 USABLE SECURITY AND PRIVACY, PUBPOL586 USABLE SECURITY AND PRIVACY, ECE657 USABLE SECURITY AND PRIVACY

ISS590 - Special Topics in Information Science + Studies

Course Description
Topics vary per semester. Information science and studies areas as understood historically, thematically, and in contemporary cultures. Theoretical readings coupled with hands-on work with technology and new media applications.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ISS590S - Special Topics in Information Science + Studies

Course Description
Topics vary per semester. Information science and studies areas as understood historically, thematically, and in contemporary cultures. Theoretical readings coupled with hands-on work with technology and new media applications.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ISS591 - Independent Study

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product. Consent of both the instructor and director of graduate studies is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ISS592 - Independent Study

Course Description
Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product. Consent of both the instructor and director of graduate studies is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

ISS593 - Research Independent Study in Information Science + Studies

Course Description
Individual research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

ISS606 - Advanced Digital Practice

Course Description
This project-based course focuses on advanced techniques in digital imaging, with emphasis on 2D digital design and/or 2D time-based media. Students will develop an exhibition-worthy portfolio of 2D digital imaging and time-based media work, accompanied by an artistic statement that discusses the work in the context of the field. The student's work will be coherent and reflective of the development of a unique and independent visual style informed by a deep understanding of historical and contemporary design. Digital projects will be supplemented with readings, discussions, and sustained artistic critique, critically relating student work to major movements and debates in art and design. Prerequisite: Visual Arts 206, 223, or 381, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS606 ADVANCED DIGITAL PRACTICE, CMAC606 ADVANCED DIGITAL PRACTICE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

ISS613S - Computational Media Studio in Advanced Digital Practice

Course Description
Advanced digital practicum in interactive computational media as vehicle for creative and critical expression. Opportunity to synthesize previous course work in multimedia practice, web/graphic/motion design, 3D modeling/gaming, computer programming. In-depth exploration of computational media production as artistic practice through exercises, projects, and critiques. Acquisition and refinement of expertise in procedural and object-oriented programming, two- and three-dimensional graphics, data visualization, physical computing, AR/VR, and other emergent computational platforms. Sustained engagement with computational ethics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC613S COMP MEDIA STUDIO ADV DIG PRAC, VMS613S COMP MEDIA STUDIO ADV DIG PRAC, HCVIS613S COMP MEDIA STUDIO ADV DIG PRAC

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

ISS615S - Comparative Media Studies

Course Description
Explores the impact of media forms on content, style, form, dissemination, & reception of literary & theoretical texts. Assumes media forms are materially instantiated & investigates their specificities as important factors in their cultural work. Puts different media forms into dialogue, including print, digital, sonic, kinematic & visual texts, & analyzes them within a theoretically informed comparative context. Focuses on twentieth & twenty-first century theories, literatures, & texts, esp. those participating in media upheavals subject to rapid transformations. Purview incl. transmedia narratives, where different versions of connected narratives appear in multiple media forms.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES627S COMPARATIVE MEDIA STUDIES, LIT625S COMPARATIVE MEDIA STUDIES, VMS625S COMPARATIVE MEDIA STUDIES

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance

ISS635S - Artificial Intelligence application and research in the Arts and Humanities

Course Description
Where do artificial intelligence, computational thinking and knowledge production intersect with humanist inquiry and visual aesthetics? This course centers on the production and output of humanist research, creative visual design, artwork and artifacts through machines and algorithms. The roles of authorship, data creation, data ethics, creativity and aesthetics will be interrogated through readings and research on theoretical texts and existing modes of cultural production. Students are expected to contribute to the course as technological makers, humanists, artists, hackers and engineers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS635S AI IN THE ARTS AND HUMANITIES, CMAC635S AI IN THE ARTS AND HUMANITIES

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

ISS640 - The History and Future of Higher Education

Course Description
Examination of the long history, from Socrates forward, of debates on meaning, purpose, and access to higher education, with special emphasis on the role of humanistic, critical thinking as foundational to all aspects of higher education. Primary focus on Western tradition of postsecondary education, plus a look at different international and alternative models, including apprenticeship, vocational and skills training, monastic training, community-based learning, lifelong learning, and online peer-to-peer open learning. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EDUC640 HISTORY/FUTURE HIGHER EDUCATIO

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ISS660S - Games, Play, and Selfhood: Immersive Media and Extended Realities

Course Description
Interdisciplinary study of history, theory, criticism, practice of immersive and interactive media, with emphasis on virtual worlds, games, and extended reality. Cross-cultural interpretative frameworks, intersectional theories, comparative approaches across East/West and Global South. Critical examination of the metaverse and playable, interactive environments as analog, historic, and contemporary phenomena. Online selfhood, avatar identities, and digital cultures. Ludology versus narratology, hyperreality, agency, aesthetics. Theories of space, place, memory, gamification, participatory media. Applications in museums, cultural heritage, art, journalism, theater, and popular media. Hands-on testing and digital authoring. Blogs, critical research paper, final projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS660S GAMES, PLAY, AND SELFHOOD, CMAC660S GAMES, PLAY, AND SELFHOOD, GSF660S GAMES, PLAY, AND SELFHOOD, AMES660S GAMES, PLAY, AND SELFHOOD

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

ISS666S - Neosentience: A Potential Future Form of AI and Research Platform Development via Unreal Game Engine

Course Description
Course explores a future form of AI called Neosentience based on mind/brain/body/environment relations (biomimetics). Weekly reports/discussions explore the topic from many perspectives related to different disciplinary understandings exploring humanistic, conceptual, computational & aesthetic paradigms—Conceptual Art. Students explore research driven by their disciplinary interests, feeding into real-world team-based research and discussion. Unreal Game Engine is being developed as a research platform/visualization system – Insight Engine 2.0. Students develop particular aspects of research: focused literature review, write a major research paper and/or define a related digital project.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS510S NEOSENTIENCE: FUTURE AI FORM, ARTSVIS510S NEOSENTIENCE: FUTURE AI FORM, CMAC666S NEOSENTIENCE: FUTURE AI FORM

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

ISS690 - Special Topics in ISS

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ISS690S - Special Topics in Information Science + Studies

Course Description
Subjects, areas, or themes that embrace a range of disciplines in the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ISS691 - Independent Study

Course Description
Individual directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member. Consent of the instructor is required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
3

ISS693 - Research Independent Study in Information Science + Studies

Course Description
Individual research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

ISS695T - Advanced Tutorial - Information Science + Studies

Course Description
Advanced undergraduate and graduate tutorial under the supervision of a faculty member or members for two or more students working on related projects. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

ISS706 - Digital Imaging

Course Description
Photoshop and Illustrator used to introduce single and serial images for print and web output. Graduate students required to create an intensive portfolio of work investigating a relevant research topic. Graduate section offered in conjunction with undergraduate course Visual and Media Studies/Visual Arts 206. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS706 DIGITAL IMAGING, VMS706 DIGITAL IMAGING, CMAC706 DIGITAL IMAGING

ISS715 - Historical Geographic Information Systems (GIS)

Course Description
This is an introductory graduate Geographic Information System (GIS) course designed to help students develop GIS skills. The class emphasizes perspectives, procedures and tools that are relevant to applications of GIS in Art History and Humanistic disciplines. This course is designed as a hybrid lecture/lab format in which direct instruction is supplemented by hands on learning labs using ArcGIS software and real-world spatial data. The main skills students will gain are: Integration of spatial and tabular data, Geoprocessing, Data visualization, Creating features, Editing Features, Vector and Raster Integration, Spatial Analysis, Georeferencing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST714 HISTORICAL GIS, CMAC715 HISTORICAL GIS

ISS717 - User Experience and User Interface Design and Development

Course Description
How do we build knowledge about computational, aesthetic, product and spatial experience? What tools and methods enable our work in the design of these interactions? This course applies methods and technologies found in the User Experience (UX) and User Interface (UI) disciplines to analyze, document, design and prototype a number of spatial and product interactions. Readings and matched contextualization writing on UI/UX design will locate student work in terms of both theory and history. Grad section: add'l written component; historical readings will be paired with a written paper contextualizing the student's term project within the theoretical framework developed through readings.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS707 UI / UX DESIGN, CMAC717 UI / UX DESIGN

ISS719S - Creative Cartography: Art and Science, Culture and Nature

Course Description
Students learn how maps and map-making has always existed in a contentious position between art & science, culture & nature. Course combines discussion of readings on critical cartography, data visualization, and Historical GIS (HGIS) w/ hands-on tutorials in ArcGIS, Adobe Illustrator, and analog drawing. Labs, final projects emphasize how the form of a map (and all its inherent presumptions of accuracy, reality, and precision) can be manipulated to make art that tells new stories about people, places, and things that run counter to dominant narratives. Prior experience w/ vector-based design software and/or GIS recommended, not required. Grad section: discussion lead, tutorials, exhibition.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS719S CREATIVE CARTOGRAPHY, ARTHIST719S CREATIVE CARTOGRAPHY, CMAC719S CREATIVE CARTOGRAPHY

ISS720 - Programming and User Interface Design in Unity 3D

Course Description
Practical concepts and exercises with the C# programming language. Basic concepts of algorithms and data structures. Discussion of basic computer graphics concepts. Introduction to the Unity3D game engine. Importing various model formats into Unity3D. User interface design in Unity3D. Advanced scripting using C# for Unity3D. Unity3D common pitfalls and tips for optimizations. Usage of augmented and virtual reality libraries. Weekly homework and final project. No prior coding experience is assumed.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC720 UNITY 3D PROG./INT. DESIGN

ISS720S - Programming and User Interface Design in Unity 3D

Course Description
Practical concepts and exercises with the C# programming language. Basic concepts of algorithms and data structures. Discussion of basic computer graphics concepts. Introduction to the Unity3D game engine. Importing various model formats into Unity3D. User interface design in Unity3D. Advanced scripting using C# for Unity3D. Unity3D common pitfalls and tips for optimizations. Usage of the MiddleVR virtual reality library. No prior coding experience is assumed.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC720S UNITY 3D PROG./INT. DESIGN

ISS733L - Virtual Museums: Theories and Methods of Twenty-First-Century Museums

Course Description
The future of museums will be one of immateriality and interaction. Course focuses on how the 'Internet of Things,' augmented reality technologies, new data analyses of artifacts will transform missions, roles, and goals of museums and collections. Core of course will be digital lab sessions focused on virtual reconstruction of lost heritage—e.g., museums and sites destroyed and damaged by ISIS and other conflicts in Iraq and the Middle East (Hatra, Nineveh, Nimrud, Baghdad). Graduate students will be assigned additional critical readings and be expected to write a final research paper of 3000 words based on a topic related to their interests worked out with the professor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST733L VIRTUAL MUSEUMS, ARTSVIS733L VIRTUAL MUSEUMS, CMAC733L VIRTUAL MUSEUMS, CLST733L VIRTUAL MUSEUMS

ISS740L - Fundamentals of Web-Based Multimedia Communications

Course Description

Multimedia information systems, including presentation media, hypermedia, graphics, animation, sound, video, and integrated authoring techniques; underlying technologies that make them possible. Practice in the design innovation, programming, and assessment of web-based digital multimedia information systems. Intended for students in non-technical disciplines. Graduate version of undergrad course also includes higher-level exploration of Javascript topics and frameworks, WebGL/3D, and data visualization and a more substantive final project than undergrad section.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CMAC740L WEB-BASED MULTIMEDIA COMMUNIC, VMS788L WEB-BASED MULTIMEDIA COMMUNIC

ISS740S - Fundamentals of Web-Based Multimedia Communications

Course Description

Multimedia information systems, including presentation media, hypermedia, graphics, animation, sound, video, and integrated authoring techniques; underlying technologies that make them possible. Practice in the design innovation, programming, and assessment of web-based digital multimedia information systems. Intended for students in non-technical disciplines. Graduate version of undergrad course also includes higher-level exploration of JavaScript topics and frameworks, WebGL/3D, and data visualization and a more substantive final project than undergrad section.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CMAC740S WEB-BASED MULTIMEDIA COMMUNIC, VMS788S WEB-BASED MULTIMEDIA COMMUNIC

ISS741L - Web Project Design and Development

Course Description

Follow-on to ISS 240L/740L. Students should be experienced with basic HTML and CSS. Information and graphic design; use-case development; readings and group critiques. Continued work with HTML, CSS, Javascript, Frameworks. Introduction to PHP, MySQL and/or other server-based authoring techniques. Creation and templating of blogs, wikis, and content management systems. Embedded media and objects. Intellectual property and fair use. User testing. Short exercises, group work, individual semester project, and public site launch. Graduate level includes more advanced/substantive digital project management and development process.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CMAC741L WEB PROJECT DESIGN AND DEVELOP

ISS751S - Digital Storytelling and Interactive Narrative

Course Description
Digital storytelling methodologies, theory, and practice. In-depth analysis of digital storytelling in various media forms and modes of production. Cultural impact of new media narratives. Exploration of digital storytelling affordances and approaches: text, video, audio, design, animation, and interactivity. Critical analysis of existing media and remediation of older media forms. Experimentation with non-linear, spatial, ludic, and hypermedia approaches. Questions of authorship, agency, authority, and collaboration in blogs, games, fan fiction, adaptations. Hands-on experience w/ digital narrative and critiques. Grads write substantial, theoretically-engaged seminar paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC751S DIGITAL STORYTELLING, LIT751S DIGITAL STORYTELLING

ISS755S - Videogame Design and Critique

Course Description
Surveys history, technology, narrative, ethics, and design of interactive computer games. Games as systems of rules, games of emergence and progression, state machines. Game flow, games as systems of pleasure, goals, rewards, reinforcement schedules, fictional and narrative elements of game worlds. Students work in teams to develop novel game-design storyboards and stand-alone games. Exploration of the interplay between narrative, graphics, rule systems, and artificial intelligence in the creation of interactive games. Programming experience not required. Graduate students required to write a critical seminar paper in addition to game design experience.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC755S VIDEOGAME DESIGN AND CRITIQUE, VMS755S VIDEOGAME DESIGN AND CRITIQUE

ISS757S - Editing for Film and Video

Course Description
Theory, history, and practice of film and video editing techniques. Exploration of narrative, documentary and experimental approaches to structuring moving image materials, using digital non-linear editing. Course work will include screening, reading, writing, editing exercises, and video production projects, culminating in a final class screening. No prior experience necessary. Graduate students will be required to complete more advanced assignments and/or additional projects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS757S EDITING FOR FILM AND VIDEO, DOCST757S EDITING FOR FILM AND VIDEO, CINE757S EDITING FOR FILM AND VIDEO

ISS758S - Digital Durham

Course Description
Bass Connections course. Representing Durham past and present with digital media. Digitize historical and cultural materials, research in archives and public records and present information through various forms including web pages, databases, maps, video and other media. Analysis of social impact of new representations of place and space. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC758S DIGITAL DURHAM, EDUC758S DIGITAL DURHAM, HISTORY758S DIGITAL DURHAM

ISS760S - Critical Digital Humanities: Theory and Practice

Course Description
Digital Humanities as an interdisciplinary and sometimes contentious 'field' or set of practices connected by their attention to how digital theories and methods transform the production of culture, representation of the past, and shape of artistic practice. Exploration of debates around and critiques of DH as a discipline, interdiscipline, transdisciplinary formation. Hack versus yack, theory versus practice. Emphasis on critical engagement. Future of higher education. Digital divides, inclusion and exclusion, and opportunities for what counts as scholarly work. Intersections with pedagogy, public humanities, artistic practice, activism. Relationship to media and technology studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC760S CRITICAL DIGITAL HUMANITIES, VMS770S CRITICAL DIGITAL HUMANITIES

ISS768 - Media History: Old and New

Course Description
Development of media forms in historical and social contexts. Impact of old 'new' media on established art, commerce, education, politics, entertainment from 19th c on. Changing ideas about authenticity, authority, agency, reception, identity, and power relating to emerging media forms, production, circulation. Overlaps, disjunctures, convergences, persistences and antiquations. Print publishing, photography, audio recording, film, telegraph, maps, exhibitions, architecture and installations; web, multimedia, database, game, virtual reality, and telepresence. Final rich media research project required. Graduate version also requires theoretically and historically informed seminar paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC766 MEDIA HISTORY: OLD AND NEW

ISS770S - Constructing Immersive Virtual Worlds

Course Description
Theory, practice, and creation of 3D virtual worlds. Hands-on design and development of online collaborative simulation environments. Introduction to graphics workflow for creating virtual world media assets. Critical exploration of state-of-the-art virtual world technologies; 3D graphics, chat, voice, video, and mixed reality systems. Topics include: history/culture of virtual worlds, identity and avatars; behavioral norms; self-organizing cultures; user-generated content, virtual world economies; architectural scalability. Graduate section includes readings and critical writing on theories of virtuality as they relate to technical content.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC770S IMMERSIVE VIRTUAL WORLDS

ISS780 - Visualizing Cities: Representing Urban Landscapes, Cultures, and Environments

Course Description
Exploring digital and visual representation of landscapes, structures, environments, history, culture, architecture, events, and populations. Change over time, cultural heritage, possible futures, and alternate pasts from historical, cultural, documentary, and scientific evidence. Idea of city as a conceptual category and metaphor. Ubiquitous computing in urban environments/medium for interaction. Global cities and diaspora. Visual imager and written accounts. Use of mapping, imaging, 3D, augmented reality, games. The graduate version includes both the final digital project and a theoretically-informed graduate seminar paper. Topics and historical foci vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST780 VISUALIZING CITIES, CMAC780 VISUALIZING CITIES, HISTORY779 VISUALIZING CITIES

ISS790 - Special Topics in Information Science + Studies

Course Description
Topics vary by semester

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ISS790S - Special Topics in Information Science + Studies

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ISS791 - Individual Research in Information Science + Information Studies

Course Description
Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ISS793L - Independent Research in Digital Knowledge

Course Description
Independent Research in Digital Knowledge in Franklin Humanities Institute.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

ISS793T - Bass Connections Information, Society & Culture Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore the evolution of society and culture through the lens of information, using the latest computational methods to address pressing problems in new and creative ways. The teams work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

ISS794L - Interactive Graphics: Critical Code

Course Description
Interactive graphics programming for artists. This class explores object-oriented programming via the P5.js and ML5.js programming environments and develops an appreciation of interactivity and computer graphics as artistic media. Students strengthen their graduate-level artistic practices through an aesthetic and conceptual engagement with interactive art. Graduate-level projects incorporate themes, language, and theory from current practices into works developed throughout the semester. Projects extend p5.js by incorporating additional libraries, the development of backend systems, or the development of additional technologies.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS794L INTERACTIVE GRAPHICS, VMS794L INTERACTIVE GRAPHICS, CMAC794L INTERACTIVE GRAPHICS

ISS795 - Bass Connections Information, Society & Culture Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore the evolution of society and culture through the lens of information, using the latest computational methods to address pressing problems in new and creative ways. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

ISS795T - Bass Connections Information, Society & Culture Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore the evolution of society and culture through the lens of information, using the latest computational methods to address pressing problems in new and creative ways. A team's work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ISS796 - Bass Connections Information, Society & Culture Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore the evolution of society and culture through the lens of information, using the latest computational methods to address pressing problems in new and creative ways. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Final paper or product containing significant analysis and interpretation. Grad students in project management roles & more substantive final projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

ISS796L - Media, Arts & Cultures Research Practicum I

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC796L RESEARCH PRACTICUM I, VMS796L RESEARCH PRACTICUM I, HCVIS796L RESEARCH PRACTICUM I

ISS796T - Bass Connections Information, Society & Culture Research Team

Course Description
Tutorial course for Bass Connections yearlong project team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to explore the evolution of society and culture through the lens of information, using the latest computational methods to address pressing problems in new and creative ways. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ISS797L - Media, Arts & Cultures Research Practicum II

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC797L RESEARCH PRACTICUM II, VMS797L RESEARCH PRACTICUM II, HCVIS797L RESEARCH PRACTICUM II

ISS798L - Media, Arts & Cultures Research Practicum III

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC798L RESEARCH PRACTICUM III, VMS798L RESEARCH PRACTICUM III, HCVIS798L RESEARCH PRACTICUM III

ISS799L - Media, Arts & Cultures Research Practicum IV

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC799L RESEARCH PRACTICUM IV, VMS799L RESEARCH PRACTICUM IV, HCVIS799L RESEARCH PRACTICUM IV

ISS890S - Special Topics in ISS

Course Description
Subjects, areas, or themes that embrace a range of disciplines related to Information Science + Studies.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ISS590-2 - Topics in Computational Media Module

Course Description
This is a special topics module that will vary by semester. It is a half-unit course.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1.5

Max Units:
1.5

ISS591-1 - Independent Study

Course Description
Half-credit independent study in Information Science + Studies. Individual non-research directed study in a field of special interest on a previously approved topic, under the supervision of a faculty member, resulting in an academic and/or artistic product. Consent of both the instructor and director of graduate studies is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

ITALIAN532S - Comparative Modernisms

Course Description
This course investigates the debated term modernism. We will explore a wide range of critical works on periodization, avant-garde movements, irony, stream of consciousness, and other key terms, to examine several major literary works of modernism, including selections from Woolf, Rilke, Marinetti, Pirandello, Musil, Joyce, and Kafka. Each student will select a representative work from a national literary tradition to contextualize for the class and research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST532S COMPARATIVE MODERNISMS, LIT532S COMPARATIVE MODERNISMS, GERMAN535S COMPARATIVE MODERNISMS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance

ITALIAN532SP - Comparative Modernisms Preceptorial

Course Description
A preceptorial, in Italian, requiring concurrent enrollment in Romance Studies 532S or Italian 532S. Enrollment allows the course to count toward the language requirement for the Italian major or minor. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

Crosslisted Courses
ROMST532SP COMPARATIVE MODERNISMS PRECEPT

ITALIAN545S - Epic and Exile: Classical Themes, Renaissance Variations

Course Description
Examines Renaissance epic poetry in relationship to themes of exile, empire, and collective identity. Studies the generic traditions of epic and romance, practices and modes of classical imitation, and transformation of epic through early modernity. Navigates the sociopolitical histories that have shaped epic poetry over time, particularly concerning political and religious conflicts, geographical and global contact, scientific innovations, and debates about women and gender. Primary readings include Virgil's 'Aeneid,' Lucan's 'De bello civile,' Dante's 'Purgatorio,' Tasso's 'Gerusalemme Liberata,' Camões's 'Os Lusíadas,' and Spenser's 'Faerie Queene.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST545S EPIC AND EXILE, LIT585S EPIC AND EXILE, MEDREN645S EPIC AND EXILE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ITALIAN582 - Dante's Divine Comedy: Hell, Purgatory, and Paradise

Course Description
A voyage through the three otherworldly places of Dante's philosophical poem (Hell, Purgatory, Paradise) whose transformation of human actions into an ordered ethical system continues to captivate readers. Same as Italian 281/History 253/Medieval and Renaissance Studies 341/Literature 245/Religion 262 but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN603 DANTE'S DIVINE COMEDY, LIT582 DANTE'S DIVINE COMEDY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

ITALIAN582P - Dante's Divine Comedy - Hell, Purgatory, and Paradise: Preceptorial

Course Description
A preceptorial requiring concurrent enrollment in Italian 582.

Grading Basis
No Grade Associated

Course Typically Offered
Occasionally

Units

Min Units:
0

Max Units:
0

ITALIAN584S - Boccaccio Studies

Course Description
Examines a particular aspect of Boccaccio's works, such as the Decameron. Issues may include Boccaccio's role in the construction of a vernacular literary community, his place in the history of literary criticism, his investigations of gender, or his relationship to the larger storytelling traditions. Taught in English with an Italian preceptorial available for majors or minors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT584S BOCCACCIO STUDIES, MEDREN618S BOCCACCIO STUDIES

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance

ITALIAN588S - Antonio Gramsci and the Marxist Legacy

Course Description
Gramsci's reinterpretation of Marxism in the context of fascist Italy. The uses of Gramsci's key concepts—subaltern, hegemony, dominance, popular culture, Americanism, Southern question—in other cultural/historical contexts, such as Indian subaltern historiography, British cultural studies or American literary studies. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT572S ANTONIO GRAMSCI/MARXIST LEGACY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ITALIAN590 - Topics in Italian Studies

Course Description
Specific aspects of Italian history, civilization, culture, and institutions. Topics may vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ITALIAN590S - Topics in Italian Studies

Course Description
Specific aspects of Italian history, civilization, culture, and institutions. Topics may vary. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ITALIAN590SP - Topics in Italian Studies - Preceptorial

Course Description
A preceptoral, in Italian, requiring concurrent enrollment in Italian 590S. Further information available from instructor.

Grading Basis
No Grade Associated

Units

Min Units:
0

Max Units:
0

ITALIAN711S - Mapping Jewish Modernism

Course Description
Students research Jewish modernism through questions of geography and movement, pointing to the many places where modern Jewish art has been created and the experiences of migration, exile, dislocation, diaspora, and resettlement that shaped this work. We discuss the varieties of ways that different art forms, including literature, theater, music, art, film, architecture, and dance, can be mapped. We analyze mapping in terms of the movements of people (artists, authors, and directors), of objects (paintings, works, and films), and within the works themselves. The extensive work with the Rubenstein Library leads to projects that contribute to an exhibit in Perkins Library and a digital site.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST711S MAPPING JEWISH MODERNISM, GERMAN711S MAPPING JEWISH MODERNISM, JEWISHST711S MAPPING JEWISH MODERNISM

ITALIAN712 - Race, Class, and Family in Contemporary Literature: Journeys, Generations, and Translations

Course Description
An opportunity to study with the Italian author Igiaba Scego, this English-language course explores representations of race, class & generations in contemporary fiction, with an emphasis on translated fiction. The course has 3 parts: 1) Analysis of Scego's work, which is crucial to debates on migration, decolonization, racism, feminism & translation; 2) read Italian and Brazilian authors to examine the intersection of color and class that cross Italy & Brazil from the colonial period to today, including the journeys & interactions between parents, siblings; 3) discussion of Scego's just-translated 'The Color Line,' which moves between the U.S., Italy, and Somalia, & Final projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST712 RACE, CLASS, & FAMILY IN LIT, PORTUGUE712 RACE, CLASS, & FAMILY IN LIT

ITALIAN713S - Svevo and World Literature

Course Description
Italo Svevo wrote some of the most important modern Italian novels, like 'Zeno's Conscience.' Through considerations of Svevo with other writers such as Darwin, Freud, Kafka, Pirandello, Proust, Shakespeare, and Woolf this class examines Svevo in his various contexts, including Italian, Austrian, German, Jewish, Triestine, European, and Modernist to understand the strengths and weaknesses of classifications according to language, religious or cultural background, nation, education, and literary movement. Graduate students will develop their critical understanding of 'world literature' through work on secondary readings and write a final conference paper related to their research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN713S SVEVO AND WORLD LITERATURE, JEWISHST713S SVEVO AND WORLD LITERATURE, LIT713S SVEVO AND WORLD LITERATURE, ROMST713S SVEVO AND WORLD LITERATURE

ITALIAN742S - Boccaccio's Decameron

Course Description
The Decameron has surprised and shocked readers for centuries. This course asks why—and how. Investigating censored editions and translations, along with visual and cinematic adaptations, we will scrutinize Boccaccio's innovative representations of sex, women, and the disenfranchised to understand the overlooked political dimension of Boccaccio's attempt to re-imagine the world after a global pandemic.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ITALIAN743 - What Machiavelli Really Says

Course Description
Everyone knows what 'Machiavellian' means, but what does Machiavelli really say? Reading his classical political texts 'The Prince,' the 'Discourses on Livy,' and 'The Art of War' in the company of his literary works, including 'Mandragola,' we will examine how Machiavelli's ideas about power, deception, language, ethics, and representation emerged from his reading of Plato, Livy, Ovid, and Dante, while also exploring the reception and consequences of his ideas. Just as Machiavelli searched history for answers to his own political situation, our guiding question cannot help but be 'What would Machiavelli do?'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY743 WHAT MACHIAVELLI REALLY SAYS, LIT743 WHAT MACHIAVELLI REALLY SAYS, POLSCI752 WHAT MACHIAVELLI REALLY SAYS

ITALIAN791 - Special Readings

Course Description
Supervised independent study and reading. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ITALIAN590S-1 - Topics in Renaissance Studies

Course Description
Focus on a particular aspect of the Italian or European Renaissance. Taught in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN690S-2 RENAISSANCE STUDIES (TOP)

ITALIAN590SP-1 - Renaissance Studies: Preceptorial

Course Description
A preceptorial, in Italian, requiring concurrent enrollment in Italian 590S-1. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Occasionally

Units

Min Units:
0

Max Units:
0

JAM510S - Science and the Media: Narrative Writing about Science, Health and Policy

Course Description
Those who write about science, health and related policy must make complex, nuanced ideas understandable to the nonscientist in ways that are engaging and entertaining, even if the topic is far outside the reader's frame of reference. Course examines different modes of science writing, the demands of each and considers different outlets for publication and their editorial parameters. Students interview practitioners of the craft. Written assignments include annotations of readings and original narratives about science and scientists. Course considers ways in which narrative writing can inform and affect policy. Prerequisites: a 200-level science course and/or permission of the instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOETHIC510S SCIENCE AND THE MEDIA, PUBPOL510S SCIENCE AND THE MEDIA

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, W - (W) Writing

JAM586SA - Politics, Policy, & the Media

Course Description
This course examines the contemporary political and policymaking landscape, with a particular emphasis on the role that both traditional media forms, such as mainstream journalism, and newer media forms, such as social media, play in the dynamics of opinion formation, public deliberation, policymaking, policy advocacy, and political campaigning. This course will take advantage of the Washington, DC location to bring in guest speakers engaged in various aspects of the political and policymaking processes, with an emphasis on those engaged in processes such as political campaign communication, political advocacy, politics, and policy reporting, and the measurement of public opinion.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL588SA POLITICS, POLICY, & THE MEDIA

General Education Curriculum Codes
SS - (SS) Social Sciences

JAM611S - Alt-Science; Bad Science: The Policy, Politics and Ethics of Misinformation on Science, Tech, Health

Course Description
This course will explore the origins, effects, and solutions to mis- and disinformation about science, technology, and health. It will investigate the social and technical forces that motivate, facilitate, amplify, and sustain misinformation about technical topics through a series of historical and contemporary cases. Drawing on ethical and policy frameworks, we will ask both what is just and what is expedient in how we approach and mitigate false and problematic content.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SCISOC611S ALT-SCIENCE; BAD SCIENCE, PUBPOL611S ALT-SCIENCE; BAD SCIENCE

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

JEWISHST541S - Jews and the End of Theory

Course Description
Examines role played by the figure of 'the Jew' (or 'Jews') in critical theory. Assesses role played by Jewish 'giants' in shaping critical theory. Explores role played by images of Jews and Jewishness in linguistic turn of 20th century theory. Asks how should one understand contemporary theory in relation to 'Jews'—literal Jews and figurative Jews, whether demise of these intellectual giants and diminishing interest in 'Jews' and 'Jewishness' means 'the end of theory', and how to conceive the relations between theory and 'Jewish Studies' in light of these questions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES541S JEWS AND THE END OF THEORY, LIT580S JEWS AND THE END OF THEORY, ICS541S JEWS AND THE END OF THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

JEWISHST555S - Art and the Holocaust: Architecture, Art, and Cultural Politics during the Nazi Period

Course Description
This course will analyze the history of the genocide of the European Jews, and its connection to antisemitic art and cultural policy during the Nazi period. With a sound understanding of the development of oppressive policies against the Jews, and looking at a variety of media (painting, architecture, film, photography, design), the course will explore the complicated relationship between developing racist policies and the world war as they impacted and were in turn influenced by artists. Examines not only artists involved in the Nazi state, but also those who resisted in exile or were its victims.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST555S ART AND THE HOLOCAUST, GERMAN565S ART AND THE HOLOCAUST, HISTORY531S ART AND THE HOLOCAUST, VMS525S ART AND THE HOLOCAUST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

JEWISHST606S - Hebrew Biblical Texts

Course Description
Select prose and poetic Hebrew biblical texts. Prerequisite: Old Testament 760 and 761 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION606S HEBREW BIBLICAL TEXTS

JEWISHST690S - Special Topics in Jewish Studies

Course Description
Special topics in Jewish Studies. Varies by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

JEWISHST711S - Mapping Jewish Modernism

Course Description
Students research Jewish modernism through questions of geography and movement, pointing to the many places where modern Jewish art has been created and the experiences of migration, exile, dislocation, diaspora, and resettlement that shaped this work. We discuss the varieties of ways that different art forms, including literature, theater, music, art, film, architecture, and dance, can be mapped. We analyze mapping in terms of the movements of people (artists, authors, and directors), of objects (paintings, works, and films), and within the works themselves. The extensive work with the Rubenstein Library leads to projects that contribute to an exhibit in Perkins Library and a digital site.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST711S MAPPING JEWISH MODERNISM, GERMAN711S MAPPING JEWISH MODERNISM, ITALIAN711S MAPPING JEWISH MODERNISM

JEWISHST713S - Svevo and World Literature

Course Description
Italo Svevo wrote some of the most important modern Italian novels, like 'Zeno's Conscience.' Through considerations of Svevo with other writers such as Darwin, Freud, Kafka, Pirandello, Proust, Shakespeare, and Woolf this class examines Svevo in his various contexts, including Italian, Austrian, German, Jewish, Triestine, European, and Modernist to understand the strengths and weaknesses of classifications according to language, religious or cultural background, nation, education, and literary movement. Graduate students will develop their critical understanding of 'world literature' through work on secondary readings and write a final conference paper related to their research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN713S SVEVO AND WORLD LITERATURE, GERMAN713S SVEVO AND WORLD LITERATURE, LIT713S SVEVO AND WORLD LITERATURE, ROMST713S SVEVO AND WORLD LITERATURE

JEWISHST730S - A Cultural and Spatial Analysis of the Ghetto: Venice, Nazi Occupied Europe, Chicago

Course Description
This seminar explores the cultural and spatial history of the Ghetto. From its origins in Venice through the spread of ghettos in Nazi-occupied Europe to the segregation of African-American populations in Chicago, specific spaces have been designated as ghettos. This designation has had an impact on the social understanding of architectural form, but it has also generated many cultural responses in material culture, art, photography, film, and other media. The course will explore the cultural understanding of the ghetto with a specific emphasis on the Jewish ghettos in Nazi-occupied Europe but with a comparative look at Venice and Chicago.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST730S A CULTURAL ANALYSIS OF GHETTOS, GERMAN730S A CULTURAL ANALYSIS OF GHETTOS, HISTORY730S A CULTURAL ANALYSIS OF GHETTOS

JEWISHST740S - East/West/Zion: Jewish Literary Modernism

Course Description

This course explores how Jewish authors in the first half of the twentieth century negotiated questions of space and place, tradition and modernity, language, nationality, religious practice, and politics. There will be a special focus on the role of Eastern Europe in the literary imagination of German-Jewish writers, and the use of modernist form and style. Authors may include Franz Kafka, Joseph Roth, Alfred Döblin, Arnold Zweig, Veza Canetti, Rose Ausländer, S.Y. Agnon, Dovid Bergelson, Isaac Babel, and Bruno Schulz. Discussions will take place in English. Most readings will be in German, with a few additional works in Hebrew, Yiddish, Russian, and Polish.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN740S JEWISH LITERARY MODERNISM, LIT730S JEWISH LITERARY MODERNISM, SES745S JEWISH LITERARY MODERNISM

JEWISHST810 - Palace Intrigue: Ecclesiastes and Esther as Philosophy, Art, and Politics

Course Description

An experiment in interpretative methodology applied to two biblical books. Ecclesiastes and Esther are late texts, unconventional within the biblical canon and challenging to preconceptions, ancient and modern, of theology and religious thought. The lecture will stress the importance of these texts in Jewish art, Jewish philosophy, and traditional Jewish biblical interpretation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION810 ECCLESIASTES AND ESTHER

JPN781 - Japanese for Graduate Students

Course Description

Completion of a regular Japanese class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Japanese as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

JPN782 - Japanese for Graduate Students

Course Description

Completion of a regular Japanese class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Japanese as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

JPN791 - Independent Study

Course Description
Individual study of language for conducting research involving sources written or spoken in the language. Students have to submit a proposal describing the purported research, types of sources to be analyzed, and kinds of language knowledge or skills they need to be equipped with. Consent of instructor and director of undergraduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

KICHE701 - Elementary K'iche' Maya I

Course Description
Introduction to essential elements of K'iche' Maya language and aspects of Maya culture. K'iche' Maya, a language spoken by about a million people in the western Highlands of Guatemala, is one of the major indigenous languages in the Americas. Emphasis on active language production to develop basic conversational skills for everyday interactions. Course taught at Vanderbilt University; Duke students participate through video conference and/or telepresence classroom. No prerequisite.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

KICHE702 - Elementary K'iche' Maya II

Course Description
Continuation of K'iche' Maya I. Second semester course that introduces the essential elements of K'iche' Maya language and aspects of Maya culture. K'iche' Maya, a language spoken by about a million people in the western Highlands of Guatemala, is one of the major indigenous languages in the Americas. Emphasis on active language production to develop basic conversational skills for everyday interactions. Course taught at Vanderbilt University; Duke students participate through video conference and/or telepresence classroom. Prerequisite: K'iche' Maya 701 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

KICHE703 - Intermediate K'iche' Maya I

Course Description
Develops greater competencies in writing in K'iche' and translation to/from K'iche'. Covers more advanced grammar (verb modalities) and broader range of scripts (colonial vs. modern orthography). Research conducted in K'iche' using the Oral History archive at the University of New Mexico (http://econtent.unm.edu/cdm/search/collection/kichemaya). Students select a story from the online archive, listen to audio, correct transcription, rewrite it in modern orthography and translate it into contemporary English to present to classmates. Taught at Vanderbilt University; Duke students participate through video conference/telepresence classroom. Prerequisite: K'iche' Maya 702 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

KICHE704 - Intermediate K'iche' Maya II

Course Description
Students read and discuss K'iche' language socio-historical context beginning with colonial texts to the present. Primarily a translating class, students read primary sources in K'iche' going back to the 16th century using philological methods. Texts include colonial dictionaries and grammars, phrase books, wills and testaments, missionary texts from colonial period and late 19th century, dance dramas, and the Popol Wuj. Learn about the range of materials available in K'iche' and the tools and methods used to work with these sources. Taught at Vanderbilt University; Duke students participate through video conference/telepresence classroom. Prerequisite: K'iche' Maya 703 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

KOREAN781 - Korean for Graduate Students

Course Description
Completion of a regular Korean class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Korean as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

KOREAN782 - Korean for Graduate Students

Course Description
Completion of a regular Korean class and a linguistics seminar. Topics vary from linguistics, language acquisition and teaching, and acquisition of a less commonly taught language. Learning Korean as well as the underlying mechanism of second language acquisition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

KOREAN791 - Independent Study

Course Description
Individual study of language for conducting research involving sources written or spoken in the language. Students have to submit a proposal describing the purported research, types of sources to be analyzed, and kinds of language knowledge or skills they need to be equipped with. Consent of instructor and director of undergraduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LATAMER525S - Indigenous languages and their speakers in Latin America

Course Description
In this course, students will engage in reflecting on the roles of indigenous languages and their speakers in the history, culture and literature of Latin America. Students will be immersed in a diverse corpus composed of oral narrations, historical documents, and material culture from digital archives and museums. The course will cover three geographical areas and the languages spoken in them, including: • Andes-Amazon: Quechua, Aymara, Tupi-Guarani and Matsigenka. • Mesoamerica: Nahuatl, K'iche and Zapotec • Southern cone: Mapudungun, Tehuelche and Guarani.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH525S INDIGENOUS LANG & CULT, HISTORY524S INDIGENOUS LANG & CULT, LSGS525S INDIGENOUS LANG & CULT

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LATAMER540S - Memory and Documentary Cinema in Latin America

Course Description
Course focuses on work of several leading Latin American filmmakers from Brazil, Chile, Argentina, and Cuba. Explores problems such as construction of memory in the wake of repressive dictatorships, relationship between revolutionary imagination and urban decay in present day Cuba, cinema's potential as a tool for cross-cultural explorations of memory and time, including relationship between past and present and our understanding of 'contemporary.'

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST540S MEMORY/DOC CINEMA LATIN AMER, VMS540S MEMORY/DOC CINEMA LATIN AMER, DOCST540S MEMORY/DOC CINEMA LATIN AMER, LIT544S MEMORY/DOC CINEMA LATIN AMER, CINE540S MEMORY/DOC CINEMA LATIN AMER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LATAMER540SP - Memory and Documentary Cinema in Latin America Preceptorial

Course Description
A preceptorial in Spanish, requiring concurrent enrollment in Romance Studies 540S or Latin American Studies 540S. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

Crosslisted Courses
ROMST540SP MEM/DOC CINEMA LAT AMER PRECPT

LATAMER590 - Special Topics in Latin American and Caribbean Studies

Course Description
Interdisciplinary study of geographical, historical, economic, governmental, political, and cultural aspects of modern Latin America and the current issues facing the region. Specific topics will vary from year to year. For juniors, seniors and graduate students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LATAMER590S - Special Topics in Latin American and Caribbean Studies

Course Description
Interdisciplinary study of geographical, historical, economic, governmental, political, and cultural aspects of modern Latin America and the current issues facing the region. Specific topics will vary from year to year. For juniors, seniors and graduate students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

LATAMER613S - Third Cinema

Course Description
Exploration of the geopolitics of situatedness and distance as they refer to the film industry, investigating processes of production, distribution, and reception of Hollywood, Third World, and diasporic films, and studying classical and artisanal modes of production in film. Addresses questions of authorship and embodiment; human rights and interventionist filmmaking as they refer themselves to human states of liminality, global movements of populations and capital. Traces the experience of globalization, urbanization, alienation, violence, nostalgia for nature and homeland as represented in the filmic image.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS530S THIRD CINEMA, LIT613S THIRD CINEMA, ICS613S THIRD CINEMA, VMS611S THIRD CINEMA, CINE644S THIRD CINEMA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance, (SS) Social Sciences

LATAMER690S - Special Topics in Latin American and Caribbean Culture and Society

Course Description
This course covers, at a graduate level, a broad range of cultural topics in Latin American and Caribbean studies from music, art, language, film, journalism, dance, poetry, politics etc. and explores the ways in which cultural expression reflects and criticizes social, economic and political forces in the region. Different topics will be chosen each term

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LATAMER790 - Special Topics in Latin American Studies

Course Description
This course for graduate and professional students will cover themes of great social, scientific, economic and or cultural significance to Latin America and the Caribbean. Topics will change each year and may be offered by visiting scholars from the Latin American and/or the Caribbean.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
2

LATAMER790S - Special Topics in Latin American Studies

Course Description
Topics vary be semester. Grad level seminar that will include social, cultural, economic, political studies of Latin American and/or the Caribbean.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LATAMER791 - Independent Study

Course Description
Student will engage in graduate-level specialized reading, multimedia work, and/or independent research related to interdisciplinary Latin American Studies in consultation with instructor. Requirements vary. Permission of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LATIN504S - Selections from Latin Texts/Authors in the Genres of History, Oratory, and/or Philosophy

Course Description

Detailed study of selections from one or more genres. Typical iterations might investigate Roman concept and practice of writing history from Cato to Ammianus Marcellinus; study of Roman oratory (readings might include Cicero, Quintilian, Tacitus); and/or philosophical texts (readings might include Lucretius, Seneca, Pliny the Elder, Vitruvius, Augustine, Boethius).

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LATIN508S - Medieval and Renaissance Latin

Course Description

Detailed study of selections from one or more authors or genres. Selections either constitute a survey of Latin literature from late antiquity through the Renaissance, or focus on specific locations or periods (e.g. Insular Writers, or the Carolingian 'Renaissance', or the Long Twelfth Century). Authors and readings might include Augustine, Isidore of Seville, Bede, Einhard, Carolingian poetry, Hrotsvita, the Carmina Burana, Heloise and Abelard, Hildegard of Bingen, Petrarch, Lorenzo Valla, Leonardo Bruni. Topics may vary.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

MEDREN608S MEDIEVAL & RENAISSANCE LATIN

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LATIN511 - Intensive First-Year Latin

Course Description

Intensive introduction to Latin language and Roman culture. Includes structure of the language (grammatical forms, syntax, vocabulary, and pronunciation) and introduction to reading. Students work with the instructor to develop primary and secondary readings in their disciplines that allow them to operationalize and reinforce linguistic skills as they acquire them. This course combines in one semester the work of Latin 101-102, and counts as 6 graduate credits.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

6

Max Units:

6

General Education Curriculum Codes

FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

LATIN524S - Latin Poetry: Epic, Lyric, and Elegy

Course Description

Detailed study of selections from one or more genre. Authors and readings might include Vergil, Ovid, Lucan, Statius' hebaid and Silvae, Valerius Flaccus, Silius Italicus, Catullus, Horace, Tibullus, Propertius, Martial, Juvencus, medieval Latin court poetry and love lyric.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LATIN528S - Selections from Latin Texts/Authors in the Genres of Drama, Satire, and/or the Novel

Course Description

Detailed study of selections from one or more of the genres Drama, Satire, Novel. Authors and readings might include Plautus, Terence, Seneca, Horace, Persius, Juvenal, Petronius, Apuleius.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LATIN551 - Elementary Latin for Graduate Students outside Classical Studies

Course Description

Study of the structure of the language (i.e., forms, vocabulary, syntax, and pronunciation); selected readings in prose and poetry. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

LATIN552 - Elementary Latin for Graduate Students outside Classical Studies

Course Description
Second half of Latin 551-552. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Prerequisite: Latin 551.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

LATIN580 - Survey of Latin Literature from its Beginnings to Late Antiquity

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LATIN581S - Latin Prose Syntax and Style

Course Description
Latin prose composition combined with analysis of the style and syntax of select Latin prose authors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

LATIN584S - Latin Palaeography

Course Description
Introduction to the field of Latin Palaeography, its history and methods; also the role of the book in the intellectual life of the medieval and Renaissance periods. Particular emphasis placed on learning to read Latin scripts from antiquity to the Renaissance.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN647S LATIN PALAEOGRAPHY

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LATIN585S - Latin Epigraphy

Course Description
Introduction to the field of Latin epigraphy, its history, methods, and place within the field of Classical Studies. Close attention to reading and translation of the variety of inscribed documentary and literary Latin texts, and to the original physical and social contexts of inscriptions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

LATIN653 - Intermediate Latin for Graduate Students outside Classical Studies

Course Description
Politics and thought in the late Republic: Caesar and Cicero. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Prerequisite: Latin 552 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

LATIN654 - Advanced Intermediate Latin for Graduate Students outside Classical Studies

Course Description
The culture of Republican and Augustan Rome: selections from Cicero, Catullus, Vergil, Horace, Ovid or similar. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Prerequisite: Latin 653 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

LATIN655 - Refresher Latin for Graduate Students outside Classical Studies

Course Description
This course is for graduate students who have had high school Latin and want or need a single refresher or preparatory course to transition to advanced (500-level) Latin. It includes grammar review and readings of real (unsimplified) prose and poetry texts not read in high school. The course will feature additional work commensurate with the difference in expectations between undergraduate and graduate classes. This could involve additional reading, additional or differently scoped exam/quiz opportunities or assignments, additional out-of-class meetings, or the like, as consistent with the goals of the class. Recommended prerequisite: at least 3 years of high school Latin (or the equivalent).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

LATIN691 - Directed Reading and Research

Course Description
Credit to be arranged.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

LATIN764 - Seminar in Latin Literature I

Course Description
Selected authors and topics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LATIN768S - Seminar in Latin Literature II

Course Description
Selected authors and topics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

LINGUIST505 - Semiotics of Culture

Course Description
The theory of literature, arts, ethnicity, modernity, and culture from a cross-cultural perspective. Texts includThe theory of literature, arts, ethnicity, modernity, and culture from a cross-cultural perspective. Texts include the critical works of Lotman and the Tartu School, Bakhtin, Eco, Kristeva, Voloshinov, Medvedev, Barthes, Todorov, Jakobson, Ivanov, and Sebeok, as well as authentic culture texts from Slavic and European traditions. Research project required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN505 SEMIOTICS OF CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LINGUIST506S - Semiotics and Linguistics (DS4)

Course Description
A survey of modern semiotics, particularly the works of C. S. Peirce, Roman Jakobson, Yury Lotman, Roland Barthes and Umberto Eco. Analysis of semiotic works directly related to questions of the construction of cultural and linguistic meaning, and linguistic sign theory. Emphasis on semiotic theories from a multi-cultural perspective, especially the European, Tartu, Soviet, and American schools. Research project required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN506S SEMIOTICS AND LINGUISTICS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (SS) Social Sciences

LINGUIST510 - Brain and Language

Course Description
The relationship of brain and language is explored through a variety of methodologies and approaches, including studies of first and second language acquisition across cultures, multilingualism, language disorders. Neuroimaging studies (including electrophysiological and hemodynamic techniques) are central to understanding current neurobiological, neurophysiological and neurolinguistic perspectives of representation of language(s) in the brain. Readings and case studies focus on the latest theoretical contributions to the field. IRB certification and data collection are required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY575 BRAIN AND LANGUAGE, NEUROSCI510 BRAIN AND LANGUAGE

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences

LINGUIST518S - Approaches and Practices in Second Language Pedagogy

Course Description
Introduction to the history and current trends in language teaching with the goal of acquiring the knowledge and skills for informed, effective and reflective language instruction. Focus on psycholinguistic and sociolinguistic dimensions of second language acquisition, key concepts of second language teaching and their applications, and integration of culture and literature in language instruction. Compares features of the target and source languages. Assignments include review of teaching materials, creating lesson plans and modules, and writing an essay stating teaching philosophies. Open only to students who have a background in Asian languages.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES518S SECOND LANGUAGE PEDAGOGY, EDUC518S SECOND LANGUAGE PEDAGOGY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry

LINGUIST564S - Russian and Slavic Linguistics

Course Description
Emphasis on synchronic linguistic theory focusing on East Slavic and Russian, but including diachronic approaches, and West and South Slavic languages. Focus on phonological, morphological, semantic and syntactic structures of Contemporary Standard Russian and modern Slavic languages.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN564S RUSSIAN AND SLAVIC LINGUISTICS, SES564S RUSSIAN AND SLAVIC LINGUISTICS

General Education Curriculum Codes
SS - (SS) Social Sciences

LINGUIST590 - Special Topics

Course Description
Study of theoretical and applied linguistics. Contrast and comparison of both theoretical approaches and language groups is required. Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LINGUIST590S - Special Topics in Linguistics

Course Description
Same as Linguistics 590 except instruction is provided in a seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LINGUIST595 - Language, Music and Dementia: Neuroscience Approaches

Course Description
Exploration of the neuroscience data on cognitive processing of languages and music in healthy subjects and pathology. Specific attention given to the interaction of language(s) and music in the brain, music therapy and dementia, and multilingualism and dementia. Topics include the role of languages and music in building cognitive reserve, linguistic breakdown and cognitive decline in healthy aging and dementia, cross-cultural studies of pitch and timbre perception across languages of the world, possible benefits of multilingualism in healthy aging, interactions of singing and memory, integration of auditory and visual neural systems in language and music.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI595 LANGUAGE, MUSIC AND DEMENTIA, MUSIC595 LANGUAGE, MUSIC AND DEMENTIA

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

LINGUIST890 - Special Topics in Linguistics

Course Description
Advanced study of linguistic theory. Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LINGUIST990 - Directed Readings in Linguistics: Special Topics

Course Description
Directed readings in linguistics on special topics. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LIT507S - Mimesis in Theory, Embodied Practice, and Literary Arts

Course Description
Theoretical exploration of mimesis from Plato and Aristotle to Tarde, Lacan, Girard, Rancière, Lacoue-Labarthe, Butler, Malabou, Cassin, and Latoo. Additional emphasis on mimesis in human and animal development and social/behavioral practice, with interdisciplinary intertexts from fields ranging from neuroscience to genomics. Frequent departures from paradigmatic and empirical evidence to revel in the sensory and intuitive renewal of literary/artistic mimetic agency and apperception. Course taught in French, with occasional sources in English. Flexible language of assignments and English discussion section for graduate students outside of the French field.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH507S MIMESIS IN THEORY AND PRACTICE, ARTHIST509S MIMESIS IN THEORY AND PRACTICE, ENGLISH581S MIMESIS IN THEORY AND PRACTICE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT508S - Atlantic Worlds Workshop

Course Description
This seminar explores the ties of interdependence between Europe, Africa, and the Americas that created an 'Atlantic world' beginning in the fifteenth century. Major topics include European settlement and colonization of the Americas; cultural exchanges among Europeans, Africans, and Indigenous peoples; the rise of the Atlantic slave trade and the transformative effects slavery had on Atlantic societies; the aspirations of the democratic revolutions of the late eighteenth century; and the abolition of slavery and the limits of emancipation. The course is connected to an ongoing workshop series that will give students the opportunity to regularly interact with prominent visiting scholars who will present their current research. Open to both graduate students and advanced undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
HISTORY507S ATLANTIC WORLDS WORKSHOP, AAAS507S ATLANTIC WORLDS WORKSHOP, CULANTH507S ATLANTIC WORLDS WORKSHOP, ICS507S ATLANTIC WORLDS WORKSHOP

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

LIT510 - Citizen Godard

Course Description
This course explores the complex interactions of poetics and politics in the films of Jean-Luc Godard, from the French New Wave, through the experimental phase of the Dziga Vertov group, to the recent Histoire(s) du cinéma and Film socialisme. Drawing on a wide range of literary and philosophical texts (Merleau-Ponty, Althusser, Deleuze, Rancière), this seminar situates Godard's work within its intellectual and political contexts, investigating how developments in French culture and thought since 1950 have been reflected in - and sometimes anticipated by - Godard's films. In English with preceptorial available in French.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH510 CITIZEN GODARD, CINE642 CITIZEN GODARD, VMS552 CITIZEN GODARD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT511S - Feeling and Protest

Course Description
Detractors of social movements deploy critiques of irrationality—as signs of unchecked emotions leading to violence—to undercut their credibility. They promote the suspicion that grassroots protests are incompatible with reason. As a result, social movements bear the burden of countering this narrative to establish a credible voice. Rather than an unconscious symptom, many social movements have historically engaged with feelings to organize political action. Beyond indigitation, disgust, desire, fatigue, solidarity, and sensory modalities like sound, visuality, and smell are used to advance their message. In this seminar we will study various social movements from the 20th and 21st centuries global Hispanophone to understand how affect mediates these struggles.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST510S FEELING AND PROTEST, SPANISH510S FEELING AND PROTEST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT512S - Performing Gender/Exhibiting Race

Course Description
Studying intersections of race/gender in art since 1945 with host of visual subjects and methodological strategies. Examines works by e.g. Barkley L. Hendricks, David Hammons, Adrian Piper, Jean-Michel Basquiat, Faith Ringgold, Kara Walker. Traces theorizing gender/race through historical documents and contemporary writings. Focus on images in documentary and fine art photography; silent and sound film; broadcast television and video art past/present. Assorted critical writings on mass media imagery. Opportunities for introduction of artists, art works, issues external to syllabus.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS512S PERFORM GENDER/EXHIBIT RACE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

LIT521S - Historical and Philosophical Perspectives on Science

Course Description
An integrated introduction to the nature of science and scientific change, and its impact on society. Counts as elective for the Science & Society Certificate Program.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF541S HIST/PHIL PERSPECT ON SCIENCE, PHIL541S HIST/PHIL PERSPECT ON SCIENCE, HISTORY577S HIST/PHIL PERSPECT ON SCIENCE

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (CZ) Civilizations

LIT522 - Eco-Media: Studies in Planetary Futures

Course Description
This course explores film, photography, online media, museum and artistic productions about the contemporary planetary ecological crisis. Visual materials will focus on climate change, environmental activism, plastic and nuclear waste, digital rubbish, 'cancer alleys' and 'cancer villages,' pollution and toxic environments, among other topics. Course readings will introduce students to debates about the Anthropocene, post-human natures, species extinction, multi-species care, geo-engineering, and planetary futures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH520 ECO-MEDIA, VMS520 ECO-MEDIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations, (SS) Social Sciences

LIT522S - Eco-Media: Studies in Planetary Futures

Course Description
This seminar explores film, photography, online media, museum and artistic productions about the contemporary planetary ecological crisis. Visual materials will focus on climate change, environmental activism, plastic and nuclear waste, digital rubbish, 'cancer alleys' and 'cancer villages,' pollution and toxic environments, among other topics. Course readings will introduce students to debates about the Anthropocene, post-human natures, species extinction, multi-species care, geo-engineering, and planetary futures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH520S ECO-MEDIA, VMS520S ECO-MEDIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

LIT525S - Art as Work: Valuing Labor in the Arts

Course Description

Interdisciplinary seminar on work, working identities, and workplace performances in the arts. Enrolled graduates and advanced undergraduates review theories of artistic production, labor, and value across the analytical traditions of cultural labor studies, critical race and feminist studies, dance and performance studies. Analysis of dominant representations of arts labor and entrepreneurship from arts management, administration and policy discourse. Our goal is to highlight institutional pressures that constrain enabling environments for the arts. Culminating research projects analyze and interpret local arts workworlds, including but necessarily students' own.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

DANCE561S ART AS WORK, ARTSVIS571S ART AS WORK, VMS571S ART AS WORK, THEATRST561S ART AS WORK

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT532S - Comparative Modernisms

Course Description

This course investigates the debated term modernism. We will explore a wide range of critical works on periodization, avant-garde movements, irony, stream of consciousness, and other key terms, to examine several major literary works of modernism, including selections from Woolf, Rilke, Marinetti, Pirandello, Musil, Joyce, and Kafka. Each student will select a representative work from a national literary tradition to contextualize for the class and research.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ROMST532S COMPARATIVE MODERNISMS, ITALIAN532S COMPARATIVE MODERNISMS, GERMAN535S COMPARATIVE MODERNISMS

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance

LIT538S - Don Quixote in the Real World: From Escapism to Engagement

Course Description

This seminar shifts the study of the novel as a literary artifact to illuminate the synergy among the fields in the humanities, political economy, and law unique to the early modern period. Diverse readings introduce how the novel encompasses centuries of humanistic thought establishing modern parameters of moral philosophy, law, history, and economic thought. Cervantes' concern with social justice, freedom, empathy, and legal protection reflect on current moral questions about migration, difference, power, and wealth. Recent films and performances based on the novel re-assess Quixotism as engagement and activism.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
SPANISH520S DON QUIXOTE IN THE REAL WORLD, ETHICS520S DON QUIXOTE IN THE REAL WORLD, MEDREN620S DON QUIXOTE IN THE REAL WORLD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT539S - Queer China

Course Description
Examines queer discourses, cultures, and social formations in China, Greater China, and the global Chinese diaspora from the late imperial period to the present. Course will focus on cultural representations, particularly literary and cinematic, but will also consider a wide array of historical, anthropological, sociological, and theoretical materials. Not open to students who have taken Asian and Middle Eastern Studies 439.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES539S QUEER CHINA, CULANTH539S QUEER CHINA, GSF502S QUEER CHINA, VMS539S QUEER CHINA, RIGHTS539S QUEER CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

LIT540S - Methods and Theories of Romance Studies

Course Description
Provides students in any PhD track of the department of Romance Studies with fundamental training in both general literary theory and in the specific methods of romance criticism.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST501S METHODS THEORIES ROMANCE STDS

LIT541S - Premodern Times: A User's Manual

Course Description
How has thinking with premodern cultures shaped criticism? Seminar explores aspects of medieval Euro-Mediterranean cultures as perennial objects of thought, investigating the ways the surviving writing and images mark key theoretical models. Inquiry proceeds by pairs of works. We debate a mode of thinking by examining critical essays with premodern works. Writers include Christine de Pizan, Alain Chartier, troubadour poets; critics such as Agamben, Boucheron, Memmi, Schlanger. Modes such as gender & sexuality; visual culture; political thought; multilingual poetics and practice. Works in translation; readings in original language and preceptorial meetings for majors/graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH530S PREMODERN TIMES, MEDREN642S PREMODERN TIMES, ROMST531S PREMODERN TIMES, ARTHIST532S PREMODERN TIMES, HISTORY508S PREMODERN TIMES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT543S - Reading Heidegger

Course Description
Closely reading major works by Heidegger Tracing the Turn in Heidegger's thought from the early metaphysical writing to the lecture courses of the 1930s. Underscores the role played by language in Heidegger's thought Probes what aesthetics means within the context of Heidegger's work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES540S READING HEIDEGGER, RELIGION560S READING HEIDEGGER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT544S - Memory and Documentary Cinema in Latin America

Course Description
Course focuses on work of several leading Latin American filmmakers from Brazil, Chile, Argentina, and Cuba. Explores problems such as construction of memory in the wake of repressive dictatorships, relationship between revolutionary imagination and urban decay in present day Cuba, cinema's potential as a tool for cross-cultural explorations of memory and time, including relationship between past and present and our understanding of 'contemporary.'

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST540S MEMORY/DOC CINEMA LATIN AMER, VMS540S MEMORY/DOC CINEMA LATIN AMER, DOCST540S MEMORY/DOC CINEMA LATIN AMER, LATAMER540S MEMORY/DOC CINEMA LATIN AMER, CINE540S MEMORY/DOC CINEMA LATIN AMER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT545S - Expanded Cinema: Cinema Outside the Movie Theater

Course Description
This project-based course will explore moving image installation practices beyond the movie theater including alternative public spaces, devices, museums, white cubes and back boxes. The course will simultaneously examine relevant artworks in the context of their diverse histories and attendant theories, from early cinema devices, through works termed as Expanded Cinema around the 1970s, to current new media manifestations. Students will focus on developing moving image installation projects of their own, to be realized at various campus locations. Open to seniors and graduate students. Prerequisite: Two 200-level or above photography or film production classes.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS640S EXPANDED CINEMA, CINE639S EXPANDED CINEMA, VMS640S EXPANDED CINEMA, DOCST640S EXPANDED CINEMA

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT551S - Translation: Theory/Praxis

Course Description
Examines theories and practices of translation from various periods and traditions (Cicero, Zhi Qian, classical and scriptural translators, Dryden, Schopenhauer, Benjamin, Jakobson, Tanizaki, Qian Zhongshu, Derrida, Apter, among others) and considers topics such as incommensurability, cultural exchange, imperialism, 'Global Englishes,' bilingualism, and techno-language. Prerequisite: open to undergraduates, but all participants must have strong command of one language aside from English, as final project involves original translation and commentary. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES551S TRANSLATION: THEORY/PRAXIS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance

LIT557 - Cultural Memory

Course Description
Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH557 CULTURAL MEMORY, HISTORY557 CULTURAL MEMORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT570S - Philosophy in Motion: Corporeality, Gesture, and Movement in Modern Thought

Course Description
In an age where the circulation of knowledge across media is paramount, what role can be ascribed to the mobile body? This seminar will investigate the central role played by the body, movement, and gesture in modern French, Caribbean, and African philosophy. We will examine their relation to questions of aesthetics and politics, as well as theories of community and practices of resistance. We will explore the body as an epistemological interface producing, encoding, and transmitting knowledge. We will also work interdisciplinarily in the fields of cinema and performing arts, addressing each as forms of intelligibility in motion. Taught in English with an optional preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH570S PHILOSOPHY IN MOTION, AAAS570S PHILOSOPHY IN MOTION, CULANTH571S PHILOSOPHY IN MOTION, DANCE571S PHILOSOPHY IN MOTION, ROMST570S PHILOSOPHY IN MOTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT571 - East Asian Cultural Studies

Course Description
East Asia as a historical and geographical category of knowledge emerging within the various processes of global movements (imperialism, colonialism, economic regionalism).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES605 EAST ASIAN CULTURAL ST, CULANTH605 EAST ASIAN CULTURAL ST, ICS605 EAST ASIAN CULTURAL ST

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

LIT572S - Antonio Gramsci and the Marxist Legacy

Course Description
Gramsci's reinterpretation of Marxism in the context of fascist Italy. The uses of Gramsci's key concepts—subaltern, hegemony, dominance, popular culture, Americanism, Southern question—in other cultural/historical contexts, such as Indian subaltern historiography, British cultural studies or American literary studies. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN588S ANTONIO GRAMSCI/MARXIST LEGACY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

LIT573S - Introduction to Contemporary African Philosophy

Course Description

The objective of this course is to provide a critical overview of contemporary African thought as expressed in philosophical discourse, social sciences, literature and the humanities. The course will explore the questions raised by contemporary thinkers from the African continent and its diasporas, by raising the stakes of a philosophizing in and about Africa, starting from Africa and its diasporas. We will examine the extent to which these thoughts shed light on the political, cultural and civilizational problems of Africa and the contemporary world. Taught in French.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

FRENCH571S CONTEMP. AFRICAN PHILOSOPHY, AAAS571S CONTEMP. AFRICAN PHILOSOPHY

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT575 - Frankfurt School Critical Theory

Course Description

This course serves as an introduction to the 'Frankfurt School' and Critical Theory with particular emphasis upon rationality, social psychology, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward an understanding of the analyses they developed and consider their validity. All readings and discussions are in English.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

GERMAN570 FRANKFURT SCHOOL, PHIL572 FRANKFURT SCHOOL, POLSCI570 FRANKFURT SCHOOL

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

LIT575S - Queer Theories of Experience & Art

Course Description

This seminar applies phenomenology to writing and thinking about art. Beginning with primary debates concerning how things present themselves to perception (Husserl, Heidegger, Shapiro, Merleau-Ponty, Beauvoir, Sartre), the course then considers poetic extrapolations (Fanon, Focillon, Bachelard), culminating in contemporary accounts (Nesbit, Salamon, Wainwright, and Ahmed) that interrogate phenomenology's basic precepts while employing its methods to address art in relation to bodily experience, identity, sexual orientation, and social context. Short exercises and a final paper provide students with the opportunity to work through these ideas in light of their own interests and research.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
ARTHIST575S QUEER EXPERIENCE & ART

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT576S - Theory & Aesthetics: Roland Barthes

Course Description
How do philosophers read and make sense of literary texts, movies, works of art and other philosophers? This course elucidates key conceptual and hermeneutic articulations under girding a philosophical signature and delineate the status of aesthetic objects in theory. It explores Roland Barthes' thought through 4 of his key theoretical moves: death of the author, reality effect, punctum, the neutre and the ground upon which he deployed them: the realist novel, techniques of cinema & photography, political antagonism, queer subjectivity. Texts to be read in English translation; students encouraged to consult the French originals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS576S THEORY & AESTHETICS, ROMST576S THEORY & AESTHETICS, VMS576S THEORY & AESTHETICS

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT577S - Edward Said: Theory, Politics, Culture

Course Description
This seminar will explore Edward Said's oeuvre in depth. Said's work consciously bypassed the borders of disciplinarily and the strictures of genres. We will focus on re-tracing the evolution of his thought through a close interpretation of the relationship between theoretical elaboration, political intervention and cultural production in his own work. In doing so, we will focus on the theoretical and historical genealogies of his seminal work Orientalism, his multiple writings on Palestine, and his views on the intellectual's vocation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES577S EDWARD SAID, ROMST577S EDWARD SAID

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT580S - Jews and the End of Theory

Course Description
Examines role played by the figure of 'the Jew' (or 'Jews') in critical theory. Assesses role played by Jewish 'giants' in shaping critical theory. Explores role played by images of Jews and Jewishness in linguistic turn of 20th century theory. Asks how should one understand contemporary theory in relation to 'Jews'—literal Jews and figurative Jews, whether demise of these intellectual giants and diminishing interest in 'Jews' and 'Jewishness' means 'the end of theory', and how to conceive the relations between theory and 'Jewish Studies' in light of these questions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES541S JEWS AND THE END OF THEORY, JEWISHST541S JEWS AND THE END OF THEORY, ICS541S JEWS AND THE END OF THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

LIT581S - Sylvia Wynter and the Question of Caribbean Philosophy

Course Description
A course on Sylvia Wynter, alongside an archipelago of Caribbean oeuvres by Firmin, Césaire, Fanon, Glissant, etc. How to map Caribbean philosophy, when it has long been critical of modern philosophy as a discourse of critical exceptionalism; a mode of bourgeois rationalist production dividing labor between the intellectuals and the workers? Wynter makes use of a Latin American paradigm of autopoiesis and embodied cognition, proposing a 'ceremony able epistemologically to emancipate humankind's knowledge of the physical and purely biological levels of reality from our order-stabilizing / legitimating symbolic codes.' More readings by McKittrick, Henry, Bogues, Casimir, Chancy, Nesbitt, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST580S CARIBBEAN PHILOSOPHY, AAAS581S CARIBBEAN PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT582 - Dante's Divine Comedy: Hell, Purgatory, and Paradise

Course Description
A voyage through the three otherworldly places of Dante's philosophical poem (Hell, Purgatory, Paradise) whose transformation of human actions into an ordered ethical system continues to captivate readers. Same as Italian 281/History 253/Medieval and Renaissance Studies 341/Literature 245/Religion 262 but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN582 DANTE'S DIVINE COMEDY, MEDREN603 DANTE'S DIVINE COMEDY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

LIT584S - Boccaccio Studies

Course Description
Examines a particular aspect of Boccaccio's works, such as the Decameron. Issues may include Boccaccio's role in the construction of a vernacular literary community, his place in the history of literary criticism, his investigations of gender, or his relationship to the larger storytelling traditions. Taught in English with an Italian preceptorial available for majors or minors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN584S BOCCACCIO STUDIES, MEDREN618S BOCCACCIO STUDIES

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance

LIT585S - Epic and Exile: Classical Themes, Renaissance Variations

Course Description
Examines Renaissance epic poetry in relationship to themes of exile, empire, and collective identity. Studies the generic traditions of epic and romance, practices and modes of classical imitation, and transformation of epic through early modernity. Navigates the sociopolitical histories that have shaped epic poetry over time, particularly concerning political and religious conflicts, geographical and global contact, scientific innovations, and debates about women and gender. Primary readings include Virgil's 'Aeneid,' Lucan's 'De bello civile,' Dante's 'Purgatorio,' Tasso's 'Gerusalemme Liberata,' Camões's 'Os Lusíadas,' and Spenser's 'Faerie Queene.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN545S EPIC AND EXILE, ROMST545S EPIC AND EXILE, MEDREN645S EPIC AND EXILE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT590 - Special Topics in Literature

Course Description
Special topics in Literature.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LIT590S - Special Topics in Literature

Course Description
Special topics in Literature.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LIT609 - Biography, Life Writing, Autofiction

Course Description

History and art of the life story, examining biography as it drives research and contemporary writing. From Montaigne to Rousseau, the biopic to the lives of troubadours, we will study modes, media and social functions: portrait, caricature, meditation, fragments, selfies. The subjects: famous or anonymous people; those who are not human, landscapes, the sea—even inanimate objects. The accounts of radical change or metamorphosis, personal epiphanies, self-conscious reflection. The aims of depicting lives as they unfold. Texts include Foucault, Augustine, Flora Tristan, Pascal, Ferraoun. Critical readings will be coupled with creative work culminating in a research project around your life. Same course as French 411 but with additional graduate-level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH611 BIO, LIFE WRITING, AUTOFICTION, HISTORY611 BIO, LIFE WRITING, AUTOFICTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT610S - Basic Concepts in Cinema Studies

Course Description

Review of theory, methodology, and debates in study of film under three rubrics: mode of production or industry; apparatus or technologies of cinematic experience; text or the network of filmic systems (narrative, image, sound). Key concepts and their genealogies with the field: gaze theory, apparatus theory, suture, indexicality, color, continuity.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE610S BASIC CONCEPTS IN CINEMA, VMS610S BASIC CONCEPTS IN CINEMA

General Education Curriculum Codes
(ALP) Arts, Lit & Performance

LIT611S - Film Feminisms

Course Description

Philosophical debates and approaches to the female form in film theory and history. Phenomenology, cultural studies, Marxism, psychoanalysis, structuralism, post-structuralism, as well as gaze theory, apparatus theory, and feminist film theory as they approach readings of the body, subjectivity and identity in cinema. Questions of spectatorship and the gendered subject. Screening and discussion of Hollywood and European avant garde films key to early debates, and of international films central to debates around the gendered subject and representation in modernity. Interrogation of feminist approaches to national cinemas.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF611S FILM FEMINISMS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

LIT612S - Theories of the Image: The Image in Walter Benjamin

Course Description
Returning to Walter Benjamin's Art Work essay and its various sources and revisions, this course will discuss recent engagements with Benjamin's work in cinema, photography, and visual and media studies and will attempt to understand the role and functions of the faculty he coins 'the mimetic' in modern culture. Readings will be drawn from the English translation of Benjamin's Selected Writings, volumes 1-4, and including his work on photography, history, surrealism and his reviews of writers such as Charles Baudelaire. Readings will also include some of Benjamin's own primary sources, such as the writings of Kracauer as well contemporary discussions of Benjamin's work in academic journals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN512S THEORIES OF THE IMAGE, ROMST612S THEORIES OF THE IMAGE, VMS612S THEORIES OF THE IMAGE, CULANTH500S THEORIES OF THE IMAGE, CINE612S THEORIES OF THE IMAGE

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT613S - Third Cinema

Course Description
Exploration of the geopolitics of situatedness and distance as they refer to the film industry, investigating processes of production, distribution, and reception of Hollywood, Third World, and diasporic films, and studying classical and artisanal modes of production in film. Addresses questions of authorship and embodiment; human rights and interventionist filmmaking as they refer themselves to human states of liminality, global movements of populations and capital. Traces the experience of globalization, urbanization, alienation, violence, nostalgia for nature and homeland as represented in the filmic image.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS530S THIRD CINEMA, ICS613S THIRD CINEMA, LATAMER613S THIRD CINEMA, VMS611S THIRD CINEMA, CINE644S THIRD CINEMA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance, (SS) Social Sciences

LIT615S - Media Philosophy: Systems, Information, Capital

Course Description
This course investigates media and media systems through a close analysis of key texts and authors in this field. It draws on and compares scholarship in the field as developed in the German, French and US theories of technology, information and communication, and mediation. This course understands media as much from an engineering point of view as from a philosophical one. It accounts for the specificity of media as information systems and accounts for the historical significance of cybernetics and computation in the development of feedback oriented and interactive systems that have transformed theories of aesthetics and politics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC623S MEDIA PHILOSOPHY, VMS623S MEDIA PHILOSOPHY

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum

LIT616S - Literature and Philosophy

Course Description
Traditionally, literary scholars apply philosophy to literature; philosophers mine literature for examples illustrating already existing philosophies. This course aims to find ways for philosophy and literature to shed light on each other. Can literature do philosophical work? How can philosophy be read? We will first study classical encounters between philosophy and literature in Plato, Aristotle, Hegel and Kant. Philosophers might include Sartre, Beauvoir, Fanon, Murdoch, Nussbaum, Derrida, Diamond, and Cavell. Theater and film: Greek tragedy, Shakespeare, Ibsen, Hollywood movies. Novels by Coetzee, Sebald, and recent autofiction. A major focus of the class will be ethics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH616S LITERATURE AND PHILOSOPHY, PHIL616S LITERATURE AND PHILOSOPHY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT617S - China As World Picture

Course Description
How does Heidegger's concept 'world picture' become relevant for the epistemological space occupied by a non-Western culture in modern times? This course explores this challenging question by foregrounding the story of modern and contemporary China, in particular China's status as an emblem of the gigantic (in scale, scope, and numbers) on the global scene. Texts to be discussed will include internationally acclaimed films (by Bertolucci, Antonioni, Chen Kaige, Zhang Yimou, Wong Kar-wai, Li Yang, Jia Zhangke, Ann Hui, and others), documentary excerpts, theoretical analyses, historical accounts, and journalistic reports, among other sources.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES616S CHINA AS WORLD PICTURE, VMS616S CHINA AS WORLD PICTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT618S - Theories of the Visual

Course Description
Examines the 'visual' as concept of major concern that traverses the debates of the modern and postmodern periods. Expands from the technological (painting, photography, cinema, television, and computation) to the theoretical and philosophical interpretation of visual culture. Examines major periods: from philosophical critique of visuality in 19th and early 20th c., to the height of cultural theory and criticism up until the 1970s; from the late 20th c. to the contemporary period that includes debates that expand our understanding of visual experience. Ends with introducing work that aims at decentralizing Western thought in the debate.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS618S THEORIES OF THE VISUAL, CINE618S THEORIES OF THE VISUAL, CMAC618S THEORIES OF THE VISUAL, ROMST618S THEORIES OF THE VISUAL, VMS618S THEORIES OF THE VISUAL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT620S - Film-philosophers/Film-makers

Course Description
Examines intersections between film, critical theory, and continental philosophy, from standpoint of spectatorship. Focuses on different approaches to film theory from a philosophical prism, and on different philosophers addressing film as a mediated visual interpretation of reality, the world, our own bodies, and societies within which we reside. Addresses film-making as an act of philosophical thought—of thinking about the world and representing subject's position within the world. Topics include, existential phenomenology, Deleuzian metaphysics, feminism, semiotics, political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE622S FILM-PHILOSOPHERS-FILM-MAKERS, VMS622S FILM-PHILOSOPHERS-FILM-MAKERS, ENGLISH620S FILM-PHILOSOPHERS-FILM-MAKERS, DOCST620S FILM-PHILOSOPHERS-FILM-MAKERS

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT625S - Comparative Media Studies

Course Description
Explores the impact of media forms on content, style, form, dissemination, & reception of literary & theoretical texts. Assumes media forms are materially instantiated & investigates their specificities as important factors in their cultural work. Puts different media forms into dialogue, including print, digital, sonic, kinematic & visual texts, & analyzes them within a theoretically informed comparative context. Focuses on twentieth & twenty-first century theories, literatures, & texts, esp. those participating in media upheavals subject to rapid transformations. Purview incl. transmedia narratives, where different versions of connected narratives appear in multiple media forms.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES627S COMPARATIVE MEDIA STUDIES, ISS615S COMPARATIVE MEDIA STUDIES, VMS625S COMPARATIVE MEDIA STUDIES

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance

LIT632 - Questions of National Cinemas

Course Description
Films, documentaries, television series, and soap operas produced in mainland China in the post-Mao era. Topics include the history and aesthetics of the cinema, soap operas as the new forum for public debates on popular culture, the emerging film criticism in China, the relationship of politics and form in postrevolutionary aesthetics. (Same as AMES 431 but requires extra assignments.) Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES631 NATIONAL CINEMAS, CINE632 NATIONAL CINEMAS, VMS632 NATIONAL CINEMAS

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

LIT650S - History of Mental Illness

Course Description
What is madness? Historical analysis offers a variety of answers to this question. This course will provide students with a broad introduction to the modern history of mental illness, with particular emphasis on the nineteenth and twentieth centuries. We will cover a diverse set of issues, including the disciplinary formation of psychiatry and neurology, new medical understandings of pathology, and the political assumptions and ramifications of defining and redefining madness in the North Atlantic and abroad.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY650S HISTORY OF MENTAL ILLNESS, NEUROSCI650S HISTORY OF MENTAL ILLNESS, PSY650S HISTORY OF MENTAL ILLNESS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

LIT651S - Theories of Violence

Course Description
Violence is a capacious concept that differs widely in terms of the context of its deployment. It can refer, for example, to expressions of state and legal authority, policing, and carceral practices; it can take on symbolic and epistemic forms in terms of processes of racialization, structures of social exclusion, and forms of bodily regulations; it can reflect the everyday enactment of personal injuries, entitlements, and power differentials; or it can designate the emancipatory force of revolutions, uprisings, and strikes. This course will attempt to explore these various facets of the concept of violence from a number of different disciplinary standpoints — including political philosophy, social theory, historical sociology, postcolonial studies, and critical race theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY651S THEORIES OF VIOLENCE, ICS524S THEORIES OF VIOLENCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

LIT681S - Wittgensteinian Perspectives on Literary Theory

Course Description
Key questions in literary theory reconsidered from the point of view of ordinary language philosophy (Wittgenstein, J. L. Austin, Cavell). Topics will vary, but may include: meaning, language, interpretation, intentions, fiction, realism and representation, voice, writing, the subject, the body, the other, difference and identity, the politics of theory. New perspectives on canonical texts on these subjects.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH582S WITTGENSTEIN AND LIT THEORY, PHIL681S WITTGENSTEIN AND LIT THEORY

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT682S - Simone de Beauvoir

Course Description
An in-depth study of Beauvoir as a philosopher, novelist, memoirist and feminist theorist. Understanding Beauvoir as an existentialist intellectual in mid-century France.Emphasis on The Second Sex. Wide-ranging reading of Beauvoir's novels, non-fiction, and memoirs, both with relevant philosophers and theorists, such as Sartre, Merleau-Ponty, and with more recent feminist theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH682S SIMONE DE BEAUVOIR, PHIL682S SIMONE DE BEAUVOIR, GSF682S SIMONE DE BEAUVOIR

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

LIT684S - Western Philosophy, Global Revolution

Course Description
Exploration of the concept of revolution as a key engine of social, political, and cultural modernity. We cover literary works and the political philosophy of calls for revolution, from the English Civil War to Occupy and the Zapatistas. Particular emphasis on the French and Russian Revolutions as key critical nodes and touchstones for other major revolutionary struggles (Haiti, 1848, 1968 in worldwide context). Special attention to the philosophy of history.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

LIT690 - Special Topics in Literature

Course Description
Topics vary by semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LIT690S - Special Topics in Literature

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

LIT691S - Black Sonic Culture—Analog to Digital

Course Description
The course will examine the production, reproduction and distribution Black (African Diasporic) 'Sound'--inclusive of, but not exclusive of various musical cultures--in the creation of Black Sonic Culture(s) that were in conversation with and counter to Black Literary Culture, Black Visual Culture and Black Performance traditions. The course, in particular, will examine the impact on the transition from analog sound to digital sound.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS622S BLACK SONIC, ENGLISH691S BLACK SONIC, MUSIC691S BLACK SONIC

General Education Curriculum Codes
IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

LIT692S - Historicizing the Mother-Child Relation in Psychoanalysis

Course Description
This seminar addresses the figure of the 'mother' and the 'mother-child' social tie as theorized in 20th century psychoanalytic literature primarily through the work of Melanie Klein, Jacques Lacan and Donald Winnicott. We will in tracking the figure of the 'mother' also, of course, be tracking the figure of the 'child.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LIT695S - Literature Seminar

Course Description
Contents and methods vary with instructors and from semester to semester.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

LIT700S - Surveillance, Technology, and Capitalism

Course Description
This class will explore the role of surveillance and technologies of monitoring and control in the world today. We will engage with debates about panopticism and privacy; social media and algorithimic amplification; e-commerce, data harvesting and platform capitalism; cyborgization and human/nonhuman configurations; labor rights and social protest under regimes of corporate and state surveillance; and changing assemblages of race, gender, citizenship and identity. Readings will range across feminist, Marxism and post-Marxism, STS, ethnographic explorations of precarity and the new economy, and literatures about digitality, finance, and biopolitics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH700S SURVEILLANCE AND TECHNOLOGY, SOCIOL700S SURVEILLANCE AND TECHNOLOGY

LIT707S - Precarity and Affect

Course Description
Explore the two concepts of precarity and affect in terms of their intersection, overlap, and interface: How is affect experienced and produced under conditions of global capitalism and expanding inequity, risk, and insecurity in social living around the world? The course will tack between theoretical and ethnographic studiers of the two concepts, considering their utility, how they can be expanded in other directions, and what an anthropological approach does, our could, lend to these topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH707S PRECARITY AND AFFECT, GSF707S PRECARITY AND AFFECT, SOCIOL771S PRECARITY AND AFFECT

LIT708S - Anthropology of Contact: Contagion, Coloniality, Capital

Course Description
In this course, we will find out what an 'anthropology of contact' can do to advance a critical analysis of culture. Contact is a prerequisite for human existence, and it can also destroy existence. Across various contexts from colonial encounters to contagious disease, we will look at what bodies exchange when they exist in proximity. We will read theoretical, historical, and ethnographic texts. Topics include malaria in the Philippines; sexuality in gentrifying New York; human porosity and toxicity; and labor and liberalism in imperial exchange.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH708S ANTHROPOLOGY OF CONTACT, HISTORY708S ANTHROPOLOGY OF CONTACT, GSF708S ANTHROPOLOGY OF CONTACT

LIT709S - Science, Medicine, and the Body

Course Description
Introduces students to scholarship about the body's complex relations to science, technology and medicine. Examines how embodied knowledges and experiences of pain, disease, injury, and ability relate to forms of gender, sexuality, race, state power, coloniality, and capital. Explores these connections across debates in medical anthropology, science and technology studies, cultural theory, and the medical humanities, while paying close attention to different genres of writing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH709S SCIENCE, MEDICINE, BODY, GSF709S SCIENCE, MEDICINE, BODY, SCISOC709S SCIENCE, MEDICINE, BODY, GLHLTH709S SCIENCE, MEDICINE, BODY

LIT713S - Svevo and World Literature

Course Description
Italo Svevo wrote some of the most important modern Italian novels, like 'Zeno's Conscience.' Through considerations of Svevo with other writers such as Darwin, Freud, Kafka, Pirandello, Proust, Shakespeare, and Woolf this class examines Svevo in his various contexts, including Italian, Austrian, German, Jewish, Triestine, European, and Modernist to understand the strengths and weaknesses of classifications according to language, religious or cultural background, nation, education, and literary movement. Graduate students will develop their critical understanding of 'world literature' through work on secondary readings and write a final conference paper related to their research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN713S SVEVO AND WORLD LITERATURE, GERMAN713S SVEVO AND WORLD LITERATURE, JEWISHST713S SVEVO AND WORLD LITERATURE, ROMST713S SVEVO AND WORLD LITERATURE

LIT715 - Cultural Memory

Course Description
Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH715 CULTURAL MEMORY, ROMST715 CULTURAL MEMORY, HISTORY715 CULTURAL MEMORY

LIT716S - Banlieues, Margins and Peripheries in French Contemporary Literature, Cinema, and Theory

Course Description
This seminar explores figurations of banlieues and peripheries in contemporary French literature and cinema, and how they are inherently intertwined with a deep renewal of realist aesthetics. We will study the recent tendency to approach margins as metonymic and conflicted geopolitical configurations, articulating issues of gender, class and race. We will examine a constellation of recent films and narratives that can be anticipatory and expressive of the French social discontent in all its complexity, from the banlieues riots to the yellow vest movement. Same as French 427S, with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH717S BANLIEUES & PERIPHERIES

LIT717S - Art & Democracy: Madrid/Barcelona/Bilbao

Course Description
Beyond the political poster and the large mural, was there a painterly art in the pre-digital age that found a fitting place on the street and the square, the quintessential citizen venues where democracy and populist politics first emerged? And is there a political praxis which may yield visual works of enduring value without sacrificing the imperative of communicability inherent in humanistic pursuits? Since the1960s such questions concerned committed Spanish artists in all styles (Tàpies, Genovés, Ibarrola, Saura, Equipo Crónica). Like Goya before them, these painters tried to help their society transition from tyranny to more inclusive forms of participation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST709S ART/DEMOCRACY/MADRID/BARCELON, SPANISH717S ART/DEMOCRACY/MADRID/BARCELON

LIT718S - Baroque: Patterns of Thought, Transformation, and Accumulation in the Hispanic World

Course Description
Interlocked patterns of thought, transformation, and accumulation exploring the problem of appearances and the reality they purport to represent, leading to dynamic transformations in sovereignty, aesthetics, performance, stories, and knowledge, entangling the increasing fascination with libraries, archives, and scientific collections, with global capitalism and its racial forms. Taught in English.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH718S BAROQUE IN THE HISPANIC WORLD, HISTORY718S BAROQUE IN THE HISPANIC WORLD

LIT730S - East/West/Zion: Jewish Literary Modernism

Course Description
This course explores how Jewish authors in the first half of the twentieth century negotiated questions of space and place, tradition and modernity, language, nationality, religious practice, and politics. There will be a special focus on the role of Eastern Europe in the literary imagination of German-Jewish writers, and the use of modernist form and style. Authors may include Franz Kafka, Joseph Roth, Alfred Döblin, Arnold Zweig, Veza Canetti, Rose Ausländer, S.Y. Agnon, Dovid Bergelson, Isaac Babel, and Bruno Schulz. Discussions will take place in English. Most readings will be in German, with a few additional works in Hebrew, Yiddish, Russian, and Polish.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN740S JEWISH LITERARY MODERNISM, JEWISHST740S JEWISH LITERARY MODERNISM, SES745S JEWISH LITERARY MODERNISM

LIT741S - The Symbolist Movement in the Arts and European Thought

Course Description
Investigates the relationship linking Symbolist aesthetics and practice with currents in European philosophy in the late nineteenth and early twentieth centuries. The reaction against Positivism; aesthetic idealism and the Platonic tradition; the influence of Schopenhauer and Nietzsche on artists and writers; Symbolism and mysticism (Theosophy, Rosicrucianism, the occult); Symbolism and the Catholic revival; Art nouveau and theories of psychology; the anarchist impulse. Emphasis on visual arts in France, England and Germany; focus on the relationship between word and image in Symbolist poetics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST741S THE SYMBOLIST MOVEMENT, VMS741S THE SYMBOLIST MOVEMENT

LIT743 - What Machiavelli Really Says

Course Description

Everyone knows what 'Machiavellian' means, but what does Machiavelli really say? Reading his classical political texts 'The Prince,' the 'Discourses on Livy,' and 'The Art of War' in the company of his literary works, including 'Mandragola,' we will examine how Machiavelli's ideas about power, deception, language, ethics, and representation emerged from his reading of Plato, Livy, Ovid, and Dante, while also exploring the reception and consequences of his ideas. Just as Machiavelli searched history for answers to his own political situation, our guiding question cannot help but be 'What would Machiavelli do?'

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

HISTORY743 WHAT MACHIAVELLI REALLY SAYS, ITALIAN743 WHAT MACHIAVELLI REALLY SAYS, POLSCI752 WHAT MACHIAVELLI REALLY SAYS

LIT745S - Brutal Humanism in Postwar Austria: Bernhard, Jelinek, Haneke, Seidl

Course Description

This seminar focuses on four postwar Austrian writers and filmmakers whose work is often described as brutal, even excessively so. Yet behind the cruelty and violence stands an unflinching commitment to unmasking the vulnerability of human existence and the unrelenting search for dignity, meaning, and connection. We will spend approximately three weeks on each figure and read works of literary theory, film theory, cultural studies, and affect theory alongside fiction and film. Primary readings in German; secondary readings in German and English; discussions in English. Students without German reading knowledge may read the primary sources in translation.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

GERMAN745S BRUTAL HUMANISM, VMS745S BRUTAL HUMANISM

LIT750S - Gender and Aesthetic Theory

Course Description

This seminar asks about the historical role played by feminine figures—muses, maidens, mothers, lovers—in the construction of aesthetic epiphanies and metamorphoses. The notion of Woman as a conduit for inspiration has a long theological, philosophical and literary tradition, beginning with the early Christian topos of the Virgin Mary as an 'aquaduct of grace.' We will interrogate this topos in search of a different and deeper understanding of what it has meant, historically, to be transformed by a work of art. Authors to be explored include Dante, Rousseau, Goethe, Schopenhauer, Wagner, Bachmann, Lacan, Irigaray, Kristeva, Kittler, and Latour. Discussions and readings in English.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

GERMAN750S THE ETERNAL FEMININE, GSF750S THE ETERNAL FEMININE, ROMST750S THE ETERNAL FEMININE

LIT751S - Digital Storytelling and Interactive Narrative

Course Description
Digital storytelling methodologies, theory, and practice. In-depth analysis of digital storytelling in various media forms and modes of production. Cultural impact of new media narratives. Exploration of digital storytelling affordances and approaches: text, video, audio, design, animation, and interactivity. Critical analysis of existing media and remediation of older media forms. Experimentation with non-linear, spatial, ludic, and hypermedia approaches. Questions of authorship, agency, authority, and collaboration in blogs, games, fan fiction, adaptations. Hands-on experience w/ digital narrative and critiques. Grads write substantial, theoretically-engaged seminar paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC751S DIGITAL STORYTELLING, ISS751S DIGITAL STORYTELLING

LIT752S - The Concept of the Symbol

Course Description
There is widespread agreement that symbols are crucial for our understanding of ourselves as humans and as humanists, but there is little agreement about what symbols actually are. This question has acquired new urgency with the development of technologies that allow computers to freely yet mechanically generate symbolic strings. The course provides an introduction to the various concepts of the symbol—from the Eucharist to French and Russian symbolism, from German and English Romanticism to the invention of semiotics, from symbolic logic to the Lacanian symbolic order—that have historically underpinned our western relationships to aesthetic practice and technological innovation.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN760S THE CONCEPT OF THE SYMBOL, ROMST760S THE CONCEPT OF THE SYMBOL

LIT760S - Major Figures in Feminist Thought

Course Description
An examination of the thought of some of the significant figures in history who have been influential in the evolution of feminist thought and theory. These may include Derrida, Irigaray, Foucault, Freud, etc. This course may be taken more than once for credit.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF860S MAJOR FIGURES/FEMINIST THOUGHT

LIT761S - Foundations in Feminist Theory

Course Description
Required for all students pursuing the graduate certificate in Women's Studies, this course serves as an in-depth introduction to the various theoretical frameworks that have and continue to inform scholarship in the field of Women's Studies. It explores differences between distinct feminist theoretical traditions (Marxist feminism, poststructuralism, psychoanalysis, queer theory) and seeks to historicize accounts of identity, difference, social movement, globalization, nationalism, and social change. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF701S FOUNDATIONS IN FEMINIST THEORY

LIT775S - Queer Art - Graduate

Course Description
This seminar applies phenomenology to writing and thinking about art. Beginning with primary debates concerning how things present themselves to perception (Husserl, Heidegger, Shapiro, Merleau-Ponty, Beauvoir, Sartre), the course then considers poetic extrapolations (Fanon, Focillon, Bachelard), culminating in contemporary accounts (Nesbit, Salamon, Wainwright, and Ahmed) that interrogate phenomenology's basic precepts while employing its methods to address art in relation to bodily experience, identity, sexual orientation, and social context. Short exercises and a final paper provide students with the opportunity to work through these ideas in light of their own interests and research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST775S QUEER ART

LIT780S - Teaching Race, Teaching Gender

Course Description
Interdisciplinary analyses of the problematics of teaching about social hierarchies, especially those of race, class, and gender. Curricular content and its interaction with the social constructions of students and teachers.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS780S TEACHING RACE, TEACHING GENDER, GSF780S TEACHING RACE, TEACHING GENDER, HISTORY780S TEACHING RACE, TEACHING GENDER

LIT788S - Expanded Cinema

Course Description
This project-based course explores moving image installations beyond the traditional movie theater, engaging with alternative venues such as public spaces, museums, and gallery environments. Students will study key works and theories from the history of moving image art, from early cinematic devices to the Expanded Cinema movement of the 1970s, and up to contemporary new media practices that will culminate in a research paper. Throughout the course, students will also design and produce their own moving image installation projects culminating in a final exhibition.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE788S EXPANDED CINEMA, DOCST788S EXPANDED CINEMA

LIT801 - History of Criticism

Course Description
Theories of art and literature from Plato and Aristotle to the early twentieth century. Special emphasis on the period from 1750 to 1900.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

LIT822S - Writing is Thinking

Course Description
This course aims to teach graduate students at any level, from first-year students to dissertation writers, how to write well and with enjoyment, and how to make writing a part of their daily life as creative intellectuals. We will cover questions of style, voice, and audience, and learn to read academic prose as writers. We will also focus on how to move from note-taking to writing, and develop an understanding of different academic genres. The course will be writing intensive. Consent of instructor is required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH822S WRITING IS THINKING

LIT826S - Contemporary Genre Fiction: The Global Novel

Course Description
This course examines the emergence of novels in various parts of the globe that address a readership beyond their respective nations or regions of origins, sometimes even beyond the novelist's national language. Under the heading of 'Contemporary Genre Fiction,' we will look particularly at adaptations and transformations of sub-genres of the novel in different contexts. Among the genres we will consider are: detective novel; science fiction; novel of manners; romance; historical and philosophical novel.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH826S CONTEMPORARY GENRE FICTION, ROMST826S CONTEMPORARY GENRE FICTION

LIT827S - The Global Novel: Post, What?

Course Description

This course examines the recent emergence of novels in various parts of the globe that address a readership beyond their respective nations and regions of origins, sometimes even beyond the novelist's national language. These novels make a point of declaring that the form of the novel traditionally organized around the experience of a representative individual is now obsolete. Critics and scholars tend to describe these novels as displaying specific forms of 'post-ness,' whether post-modern, post-human, post-apocalyptic, post-revolutionary, and post-exotic.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH827S THE GLOBAL NOVEL: POST WHAT?, ROMST827S THE GLOBAL NOVEL: POST WHAT?

LIT836S - Freudo-Marxism

Course Description

The collision of psychoanalysis and Marxism in the first half of the twentieth century gave rise to a diverse set of efforts to synthesize Freud's understanding of the psyche with Marx's dialectical view of social transformation. This seminar examines how major philosophers, theoreticians, and literary writers from the 1920s onward imagined the intersection of psychological and socioeconomic structures.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LIT840S - Seminar in Emergent Literatures

Course Description

An advanced seminar in the literature of Third World or nonwestern countries. Specific topics vary from year to year.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT850S - Deleuze: Cinema and Philosophy

Course Description

Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

LIT881S - Critical Posthumanities: The Human in Question

Course Description
Beginning in the 1990s, the 'posthuman' has evolved as a chameleon-like concept designating everything from the transhumanist project to assure the continuity of humanity beyond the limits of human embodiment to the critical interrogations of suspect ontological boundaries separating the human from the non-human world writ large. Our discussion will be framed around two contemporary challenges to the human: how climate change repositions the human within larger, cosmological process; and how AI seeks to subsume the human into a generic model of intelligence.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC881S CRITICAL POSTHUMANITIES

LIT882S - Philosophy and Literature

Course Description
Looks at what defines subject matter/boundaries/methodologies/products of analytic philosophical discourse & literature (mostly novels & plays). Central question: Are there ways of treating philosophical problems in ethics, epistemology, & metaphysics that are well-suited to expression in literature than in standard analytic philosophical discourse? Discusses advantages/disadvantages of different idioms, disciplines for addressing phil problems; what lit can teach about phil problems relating to mind/morals/meaning of life. Prior to seminar students study A. J. Ayer's Language, Truth and Logic, (seminar's exemplar for analytic philosophy). Approved course for PAL Certificate.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL947S PHILOSOPHY & LITERATURE

LIT890 - Special Topics in Literature

Course Description
Contents and methods vary with instructors and from semester to semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LIT890S - Seminars in Literature

Course Description
Contents and methods vary with instructors and from semester to semester.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

LIT891 - Special Readings

Course Description
Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

LIT892S - Publication Workshop

Course Description
This course is a writing intensive, works-in-progress seminar for doctoral students interested in preparing an article for publication. It will explore the everyday challenges of writing and introduce students to the professional practices and protocols of journal publication. During the term, you will read and comment on the work of your peers, learn how to interpret and generate feedback in the form of 'reader's reports,' revise and present your own essay, and explore potential publication venues. The final act of the course will entail submitting your essay for publication in the journal of your choice.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LIT690-1 - Special Topics in Literature of the Modern Era

Course Description
Study of a particular author, genre, or theory of modern literature. Topics include changing understandings of authorship, questions of reception, translation, and the history of criticism.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT690-3 - Topics in Cultural Studies

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

LIT690-6 - Topics in Psychoanalytic Theory and Criticism

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT690-7 - Special Topics in Literature and History

Course Description
Relationship of literary texts to varieties of historical experience such as wars, periods of revolutionary upheaval, periods of intense economic growth, 'times of troubles,' or stagnation. Literary texts and historical content posed in such formal ways as the theoretical problem of the relationship between literary expression and form and a range of historical forces and phenomena.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT690-8 - Special Topics in Literature: Paradigms of Modern Thought

Course Description
Specialized study of the work of individual thinkers who have modified our conceptions of human reality and social and cultural history, with special emphasis on the form and linguistic structures of their texts considered as 'language experiments.' Topics vary from year to year, including: Marx and Freud, J.P. Sartre, and Walter Benjamin.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LIT690S-3 - Topics in Cultural Studies

Course Description
Contents and methods vary with instructors and from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT690S-4 - Special Topics in Film

Course Description
Contents and methods vary with instructors and from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT690S-6 - Topics in Psychoanalytic Theory and Criticism

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LIT690S-8 - Special Topics in Literature: Paradigms of Modern Thought

Course Description
Specialized study of the work of individual thinkers who have modified our conceptions of human reality and social and cultural history, with special emphasis on the form and linguistic structures of their texts considered as 'language experiments.' Topics vary from year to year, including: Marx and Freud, J.P. Sartre, and Walter Benjamin. Seminar version of Literature 690-8.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LS750 - Interdisciplinary Studies

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

LS760 - Selected Topics

Course Description
Core course open to M.A.L.S. students only.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LS770 - Selected Topics

Course Description
Core course open to M.A.L.S. students only.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LS780 - Selected Topics

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LS850 - Master's Project Colloquium

Course Description
Master's Project Colloquium

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

LS890 - Special Readings

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LS899 - Directed Readings

Course Description
Directed Readings

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

LSGS517S - The Latinx South: Immigration, Race, and the Nuevo South

Course Description
In the past decades many of the fastest growing Latino/a populations have been in the US South. Instead of traditional sites of immigration like Los Angeles and New York, the U.S. South has become home to a diverse group of Latino immigrants. This course examines the history of Latino/as in the U.S. South. Spanning the twentieth-century it will trace the long history of Latino/as in the South and how they experienced Jim Crow segregation, the Civil Rights Movement, white supremacy, and labor struggles. This interdisciplinary approach the study of race and region will expose students to a diverse range of texts including historical monographs, memoirs, graphic novels, and documentaries.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY517S THE LATINX SOUTH

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (CZ) Civilizations

LSGS525S - Indigenous languages and their speakers in Latin America

Course Description
In this course, students will engage in reflecting on the roles of indigenous languages and their speakers in the history, culture and literature of Latin America. Students will be immersed in a diverse corpus composed of oral narrations, historical documents, and material culture from digital archives and museums. The course will cover three geographical areas and the languages spoken in them, including: • Andes-Amazon: Quechua, Aymara, Tupi-Guarani and Matsigenka. • Mesoamerica: Nahuatl, K'iche and Zapotec • Southern cone: Mapudungun, Tehuelche and Guarani.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH525S INDIGENOUS LANG & CULT, HISTORY524S INDIGENOUS LANG & CULT, LATAMER525S INDIGENOUS LANG & CULT

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

LSGS690 - Special Topics in Latino Studies in the Global South

Course Description
A comparative approach to Latino Studies in the Global South that draws on the methods and materials of other disciplines. Focus on interdisciplinary study. Contents vary with instructors.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

LSGS690S - Special Topics in Latino Studies in the Global South - Seminars

Course Description
A comparative approach to Latino Studies in the Global South that draws on the methods and material of other disciplines. Focus on interdisciplinary study. Contents vary with instructors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MALAGASY701 - Elementary Malagasy I

Course Description
This course introduces students to the Malagasy language, which is spoken by 25 million people in Madagascar and the Comoro Islands. This is the first semester of a two-semester sequence, in which students will learn to speak, listen, read, and write basic Malagasy, as well as learn to function appropriately in routine situations in the target culture. Hybrid format (in person/online components).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MALAGASY702 - Elementary Malagasy II

Course Description
Malagasy is spoken by 25 million people in Madagascar and the Comoro Islands. This course is a continuation of Elementary Malagasy I, and continues to build listening, speaking, reading, and writing skills. As students develop interpersonal, interpretive, and presentational skills in Malagasy, they will learn to function appropriately in routine situations in the target culture. Texts include authentic materials and video. Prerequisite: Elementary Malagasy 1 or permission of instructor. Hybrid format (in person/online components).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MALAGASY703 - Intermediate Malagasy

Course Description
Content-based approach focusing on aspects of Malagasy culture and society, with emphasis on the study of authentic audio and written texts. Course builds on elements of language acquired in the elementary sequence, expanding range and complexity of grammar and vocabulary. Hybrid format (in person/online components).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MARSCI504A - Marine Protected Area Monitoring and Management

Course Description
An interdisciplinary course that addresses concepts, issues, and approaches relevant to marine protected areas (MPAs) and their impacts on marine ecosystems and coastal people. Course will address key topics on MPA design, implementation, management, monitoring, and evaluation. Attention will be given to sensitive marine ecosystems (e.g. coral reefs) and resource-dependent fishing and tourism communities. Using real world case studies, students will apply introduced concepts and quantitative approaches to questions on MPA monitoring and evaluating their impacts. Students will engage with the course material primarily through group discussions, problem sets, and lectures. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON504A MARINE PROTECTED AREAS, ETHICS504A MARINE PROTECTED AREAS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

MARSCI528SA - Community-Based Marine Conservation

Course Description
Experiential education course on community-based conservation. Students learn first-hand about the challenges (accomplishments, failures, and promises) involved in its design and practice in developing countries of high biological diversity. Learn about the unique natural and political history, and social characteristics of the places where conservation takes place. Students link local context to broader perspectives through key readings and class discussions. Taught in Beaufort at Duke Marine Lab. Instructor consent required, visit DUML website for details.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON528SA COMMUNITY-BASED CONSERVATION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

MARSCI533A - Marine Fisheries Policy

Course Description
Principles, structure, and process of public policy-making for marine fisheries. Topics include local, regional, national, and international approaches to the management of marine fisheries. A social systems approach is used to analyze the biological, ecological, social, and economic aspects of the policy and management process. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON533A MARINE FISHERIES POLICY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

MARSCI551DA - International Conservation and Development

Course Description
Interrelated issues of conservation and development. Topics include the evolution of the two concepts and of theories regarding the relationship between them, the role of science, values, ethics, politics and other issues in informing beliefs about them, and strategies for resolving conflicts between them. While attention will be given to all scales of interaction (i.e. local, regional, national, international), the focus will be on international issues and the 'north-south' dimensions of the conservation and development dilemma. Examples from marine and coastal environments will be highlighted. Consent of instructor required. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON551DA CONSERVATION AND DEVELOPMENT, ETHICS551DA CONSERVATION AND DEVELOPMENT

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, SS - (SS) Social Sciences

MARSCI571A - Sojourn in Singapore: Urban Tropical Ecology

Course Description
The mix of human ecology, tropical diversity, disturbed habitats and invasive species in Singapore. How Singapore maintains and enhances the quality of life of its citizens while radically modifying its environment. Research on politics, management or biology. Travel to Singapore required. Taught in Beaufort at Duke Marine Lab. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY571A URBAN TROPICAL ECOLOGY, ENVIRON571A URBAN TROPICAL ECOLOGY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

MARSCI573 - Coastal and Marine Pollution

Course Description
Sources, fate, and effects of organic, inorganic, and particulate pollutants in the marine environment. Topics include oil spills, coastal eutrophication, marine debris, harmful algae, sewage contamination, dredging, and emerging contaminants. Methods for measuring pollution in the marine environment and consequences for human and ecological health will be discussed. Case studies of impacted marine environments will be highlighted. Short local field trips possible. Recommended prerequisite: introductory chemistry and biology, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON573 COASTAL AND MARINE POLLUTION

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

MARSCI573A - Coastal and Marine Pollution

Course Description
Sources, fate, and effects of organic, inorganic, and particulate pollutants in the marine environment. Topics include oil spills, coastal eutrophication, marine debris, harmful algae, sewage contamination, dredging, and emerging contaminants. Methods for measuring pollution in the marine environment and consequences for human and ecological health will be discussed. Case studies of impacted marine environments will be highlighted. Short local field trips possible. Taught in Beaufort at Duke Marine Lab. Recommended prerequisite: introductory chemistry and biology, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON573A COASTAL AND MARINE POLLUTION

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, NS - (NS) Natural Sciences

MARSCI585 - Fisheries Biogeography and Ecology

Course Description
Current status of the distribution and abundance of fisheries globally and current topics in fisheries ecology, explored through lecture and discussion of primary literature. Participation in leading discussions and mini literature review. Basic knowledge of ecology and oceanography. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON585 FISHERIES BIOGEOGRAPHY & ECOLO

General Education Curriculum Codes
NS - (NS) Natural Sciences

MARSCI585A - Fisheries Biogeography and Ecology

Course Description
Current status of the distribution and abundance of fisheries globally and current topics in fisheries ecology, explored through lecture and discussion of primary literature. Participation in leading discussions and mini literature review. Basic knowledge of ecology and oceanography. Intended for master and doctoral students. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON585A FISHERIES BIOGEOGRAPHY & ECOLO

General Education Curriculum Codes
(NS) Natural Sciences

MARSCI570LA-1 - Experimental Tropical Marine Ecology

Course Description
Distribution and density of marine and semi-terrestrial tropical invertebrate populations; behavioral and mechanical adaptations to physical stress, competition, and predation using rapid empirical approaches and hypothesis testing. Taught in Beaufort at Duke Marine Lab, with preparation for fieldwork before and analysis and presentation of projects after required one-week intensive field experience on the coast of Panama. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOLOGY570LA-1 TROPICAL MARINE ECOLOGY

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences

MARSCI571A-1 - Urban SubTropical Ecology

Course Description
Domestic version of MARSCI 571A Urban Tropical Ecology. The mix of human ecology, subtropical diversity, disturbed habitats and invasive species in the Eastern US. Comparing how Asian and US planners maintain and enhance the quality of life of citizens in radically modified environments. Research on politics, management, biology and social science of land use restoration and tourism. Travel in South Eastern US to experience solutions to disturbed environments required. Domestic travel required. Instructor consent required. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY571A-1 URBAN SUBTROPICAL ECOLOGY, ENVIRON571A-1 URBAN SUBTROPICAL ECOLOGY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

MAT702 - Educating Adolescents

Course Description
Students will examine learning as a constructive process, including how mental frameworks organize memory and guide thought, the role metacognition and motivation play in learning, and why social interaction is paramount to cognitive development. Students will also consider identity development in adolescence and the social world of teenagers. Fieldwork observations at the School for Creative Studies will comprise a component of this course. Open to Master of Arts in Teaching students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MAT703 - Effective Teaching Strategies

Course Description
What is involved when a teacher creates and orchestrates an effective lesson? Students will delve into how teachers facilitate the engagement of all students, as they backwards plan, activate students' prior knowledge, incorporate a variety of learning modes, use formative assessments, apply before-during-after scaffolding, leverage technology, allow opportunities for student processing, ask critical thinking questions, and provide a safe and supportive learning environment for their students. Open to Master of Arts in Teaching students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MAT741 - Internship and Reflective Practice

Course Description
During this 18-week internship at a Durham Public High School, students will work with an experienced mentor teacher to build a classroom community, foster relationships with students, and plan and implement effective instruction. As part of their internship, students will observe other teachers, attend school meetings and events, and work with school staff and families to learn about their students. Students will engage in consistent reflection on their teaching practice, guided by their mentors and university supervisors.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

MAT742 - Internship and Reflective Practice

Course Description
During this 9-week, full-day internship at a Durham Public High School, students will work with an experienced mentor teacher to build a classroom community, foster relationships with students, and plan and implement effective instruction. In addition to teaching in their mentor's classroom, students will participate in all aspects of a teacher's day, from hall duty to lunch duty to communication with parents. Students will engage in consistent reflection on their teaching practice, guided by their mentors and university supervisors.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
6

Max Units:
6

MAT743S - The Practice of Culturally Responsive Teaching

Course Description

Students will think critically about what it means to be a culturally responsive teacher in terms of reaching all students through relevant lesson planning, differentiating instruction, using a variety of assignments and assessment methods, and fostering a safe and collaborative learning environment for their students. Students will also learn strategies for teaching English learners and will consider what effective classroom management looks like and feels like and why. Open to Master of Arts in Teaching students only.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

2

Max Units:

2

MAT744S - Leading through Teaching

Course Description

Students will define what it means to be a 'teacher leader' through participating in collaborative work with teacher colleagues, administrators, and school staff and by teaming with the families and significant adults in the lives of students. This course will help student teachers to partake in the work that goes into effective teaching outside of classroom instruction, as they explore the vital roles that teachers play in the health of their schools and communities. Open to Master of Arts in Teaching students only.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

MAT745S - Students, Schools, and Communities in Documentary Film

Course Description

This course supports MAT candidates in two key pedagogical areas: the affirmation of community and cultural wealth and the use of film within the classroom. Through collaboration with the Center for Documentary Studies and FullFrame Film, MAT candidates will develop an understanding of the relationship between schools, students, and communities in film and develop skill in the use of documentary film and informational film in secondary instruction. Open to MAT candidates only.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

MAT746 - Advanced Methods and Materials for Teaching Secondary - Humanities (English/Social Studies)

Course Description

Examines teaching practices, methods, diverse curricular materials and in-depth content knowledge for teaching inquiry in the area of secondary humanities subjects - social studies and English. MAT candidates explore and apply discipline-specific practices and concepts aligned to culturally responsive and sustaining instruction. Open to MAT candidates only.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MAT747 - Advanced Methods and Materials for Teaching Secondary - STEM

Course Description
Examines teaching practices, methods, diverse curricular materials and in-depth content knowledge for teaching inquiry in the area of secondary STEM subjects- science and math. MAT candidates explore and apply discipline-specific practices and concepts aligned to culturally responsive and sustaining instruction. Open to MAT candidates only.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MAT748 - Assessment, Evaluation, & Educational Technology

Course Description
Prepares pre-service secondary teachers to evaluate, develop, and implement a variety of student assessments, both formative and summative, to improve student learning in a culturally sustaining environment. Examine strategies for data collection, recording, analysis, and interpretation to inform decision-making. Explore current issues, standards, and strategies for integrating educational technology in instruction to support student learning outcomes. Recommended prerequisites: MAT 702, MAT 703.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MAT749 - Differentiated Instruction and Diverse Learners

Course Description
MAT teacher candidates explore issues, frameworks, and strategies related to meeting the learning needs of diverse secondary classrooms, including linguistic diversity, developmental diversity, diversity of ability, cultural diversity, racial and ethnic diversity, and gender diversity. Emphasis on implementing classroom-based and content-specific strategies to differentiate instruction to support diverse learners and improve learning outcomes. Recommended prerequisites: MAT 702, MAT 703.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MAT791 - Independent Study

Course Description
Independent Study in teaching methods. Open only to MAT students. Consent of Director of Graduate Studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

MATH501 - Introduction to Algebraic Structures I

Course Description
Groups: symmetry, normal subgroups, quotient groups, group actions. Rings: homomorphisms, ideals, principal ideal domains, the Euclidean algorithm, unique factorization. Not open to students who have had Mathematics 401. Recommended prerequisite: Mathematics 221 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH502 - Introduction to Algebraic Structures II

Course Description
Fields and field extensions, modules over rings, further topics in groups, rings, fields, and their applications. Prerequisite: Mathematics 501, or 401 and consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH527 - General Relativity

Course Description
This course introduces the concepts and techniques of Einstein's general theory of relativity. The mathematics of Riemannian (Minkowskian) geometry will be presented in a self-contained way. The principle of equivalence and its implications will be discussed. Einstein's equations will be presented, as well as some important solutions including black holes and cosmological solutions. Advanced topics will be pursued subject to time limitations and instructor and student preferences. Prerequisite: A familiarity with the special theory and facility with multivariate calculus.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS622 GENERAL RELATIVITY

MATH531 - Real Analysis I

Course Description
Topology of R^n, continuous functions, uniform convergence, compactness, infinite series, theory of differentiation, and integration. Not open to students who have had Mathematics 431. Recommended prerequisite: Mathematics 221.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
W - (W) Writing, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH532 - Real Analysis II

Course Description
Differential and integral calculus in R^n. Inverse and implicit function theorems. Further topics in multivariable analysis. Recommended prerequisite: Mathematics 221, Mathematics 531, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH541 - Applied Stochastic Processes

Course Description
An introduction to stochastic processes without measure theory. Topics selected from: Markov chains in discrete and continuous time, queuing theory, branching processes, martingales, Brownian motion, stochastic calculus. Prerequisite: Mathematics 230 or Mathematics 340 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA621 APPLIED STOCHASTIC PROC

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH545 - Introduction to Stochastic Calculus

Course Description
Introduction to the theory of stochastic differential equations oriented towards topics useful in applications. Brownian motion, stochastic integrals, and diffusions as solutions of stochastic differential equations. Functionals of diffusions and their connection with partial differential equations. Ito's formula, Girsanov's theorem, Feynman-Kac formula, Martingale representation theorem. Additional topics have included one dimensional boundary behavior, stochastic averaging, stochastic numerical methods. Prerequisites: Undergraduate background in real analysis (Mathematics 431) and probability (Mathematics 230 or 340).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH551 - Applied Partial Differential Equations and Complex Variables

Course Description
Initial and boundary value problems for the heat and wave equations in one and several dimensions. Fourier series and integrals, eigenvalue problems. Laplace transforms, solutions via contour integration, and elementary complex variables. Solutions via Green's functions. Intended for applied math students and students in science and engineering. Prerequisite: Mathematics 216 and 353 or the equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH553 - Asymptotic and Perturbation Methods

Course Description
Asymptotic solution of linear and nonlinear ordinary and partial differential equations. Asymptotic evaluation of integrals. Singular perturbation. Boundary layer theory. Multiple scale analysis. Prerequisite: Mathematics 353 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH555 - Ordinary Differential Equations

Course Description
Existence and uniqueness theorems for nonlinear systems, well-posedness, two-point boundary value problems, phase plane diagrams, stability, dynamical systems, and strange attractors. Prerequisite: Mathematics 221, 216 or 356, and 531 or 431.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH557 - Introduction to Partial Differential Equations

Course Description

Fundamental solutions of linear partial differential equations, hyperbolic equations, characteristics, Cauchy-Kowalevski theorem, propagation of singularities. Prerequisite: Mathematics 532 or equivalent.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH560 - Theory and Practice of Algorithms

Course Description

The mathematical theory of algorithms and graphs and their practical implementations. Examines the foundational mathematical structures for the behavior and analysis of algorithms from a variety of domains, with a particular emphasis on graphs. Students tie theory to practice by writing code to implement algorithms, and compare experimentally observed run-times to those predicted by the mathematical theory. Recommended prerequisite: Computer Science 201; or recommended corequisite: ECE 551; or equivalent.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH561 - Numerical Linear Algebra, Optimization and Monte Carlo Simulation

Course Description

Structured scientific programming in C/C++ and FORTRAN. Floating point arithmetic and interactive graphics for data visualization. Numerical linear algebra, direct and iterative methods for solving linear systems, matrix factorizations, least squares problems and eigenvalue problems. Iterative methods for nonlinear equations and nonlinear systems, Newton's method. Prerequisite: Mathematics 212 and 221.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH563 - Applied Computational Analysis

Course Description

Approximation theory: Fourier series, orthogonal polynomials, interpolating polynomials and splines. Numerical differentiation and integration. Numerical methods for ordinary differential equations: finite difference methods for initial and boundary value problems, and stability analysis. Introduction to finite element methods. Prerequisite: Mathematics 561 and familiarity with ODEs at the level of Mathematics 216 or 356.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH565D - Numerical Analysis

Course Description
Error analysis, interpolation and spline approximation, numerical differentiation and integration, solutions of linear systems, nonlinear equations, and ordinary differential equations. Prerequisites: knowledge of an algorithmic programming language, intermediate calculus including some differential equations, and Mathematics 221.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI520D NUMERICAL ANALYSIS, STA612D NUMERICAL ANALYSIS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH571 - Algorithmic Game Theory

Course Description
Study of algorithmic aspects of basic questions in microeconomics. Topics include solution concepts for games, a mechanism design, and auction theory, social choice, and resource allocation and fairness. Recommended prerequisites: Strong foundation in algorithms at the level of CompSci 330 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI535 ALGORITHMIC GAME THEORY, ECON565 ALGORITHMIC GAME THEORY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH574 - Quantitative Methods for Biomedical Studies

Course Description
Quantitative methods for analyzing biomedical data. Data generation and related domain knowledge, data visualization and pre-processing tools, scientific problem formulation and data modeling, quantitative methods selection and application, pipeline programming and coding, and result checking and visualization. The interdisciplinary approach prepares students in math, statistics, biostatistics, computer science, and engineering for careers in biomedical data science. Recommended prerequisites: Multivariate calculus, linear algebra, undergraduate-level probability, undergraduate-level statistics, and R programming.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB575 QUANT METHODS IN BIOMED, BIOSTAT917 QUANT METHODS IN BIOMED

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH575 - Mathematical Fluid Dynamics

Course Description
Properties and solutions of the Euler and Navier-Stokes equations, including particle trajectories, vorticity, conserved quantities, shear, deformation and rotation in two and three dimensions, the Biot-Savart law, and singular integrals. Additional topics determined by the instructor. Prerequisite: Mathematics 453 or 551 or an equivalent course.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH577 - Mathematical Modeling

Course Description
Formulation and analysis of mathematical models describing problems from science and engineering including areas like biological systems, chemical reactions, and mechanical systems. Mathematical techniques such as nondimensionalization, perturbation analysis, and special solutions will be introduced to simplify the models and yield insight into the underlying problems.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH581 - Mathematical Finance

Course Description
An introduction to the basic concepts of mathematical finance. Topics include modeling security price behavior, Brownian and geometric Brownian motion, mean variance analysis and the efficient frontier, expected utility maximization, Ito's formula and stochastic differential equations, the Black-Scholes equation and option pricing formula. Prerequisites: Mathematics 212 (or 222), 221, and 230 (or 340), or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON673 MATHEMATICAL FINANCE

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH582 - Financial Derivatives

Course Description
A rigorous introduction to financial derivatives with applications. Topics include: binomial trees and geometric Brownian motion; European options, American options, forwards, and futures; put-call parity; the Black-Scholes-Merton pricing formula and its derivations; Delta and Gamma hedging; implied volatility; Merton jump-diffusion model; Heston model; GARCH(1,1) model. Prerequisites: Math 212 (or 222) and Math 230 (or 340) or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON674 FINANCIAL DERIVATIVES

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH583 - Introduction to Data Science and Quantitative Methods in Risk Management

Course Description
Introduction to risk management practices in Finance. Students will learn various forms of risks facing a financial institution, including market risk, credit risk, and operational risks, etc. Class discusses how data science and quantitative methods are used to model and measure these risks to make optimal management decisions. The course will involve case studies of failures of large financial institutions. Important focus on ways to manage and hedge risks using derivatives. Introduction to financial products and derivatives, including options, futures, and swaps, etc.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
IDS583 DERIVATIVES & RISK MANAGEMENT

General Education Curriculum Codes
QS - (QS) Quantitative Studies

MATH585 - Introduction to Algorithmic Trading – Financial Data and Modeling

Course Description
In this course on the complexity of financial data and the challenges in modeling them students will learn a variety of financial data sets, perform research and analysis on these data, and develop mathematical models for profitable trading and investment strategies. Includes group projects designing algorithms in a live trading environment based on financial/mathematical theories. Industry guests will discuss real-world practices. Prerequisites: Linear Algebra (e.g., MATH 216, 218), Probability (e.g., MATH/STA 230, MATH 340/STA 231), Programing, preferably in Python (e.g., MATH 281L/260L). Preferred, but not required: Finance (e.g., MATH 581/ECON 673) and Linear Regression (e.g., STA 210/MATH 238L).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH586 - Data Science and Decision Optimization in Banking & Financial Services

Course Description
Course teaches students how to apply machine learning and artificial intelligence techniques, traditional statistical modeling skills, decision optimization methods, and economic and financial theory to perform quantitative analysis, develop models, and optimize decisions in the banking and financial services industries. It prepares students for quantitative finance careers in wealth management, consumer lending, commercial banking, risk management, and CCAR stress testing. In addition to rigorous academic training, students also gain practical experience through case studies and develop a showcase project with the support of financial industry experts.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
IDS586 DATA SCIENCE IN BANKING

General Education Curriculum Codes
QS - (QS) Quantitative Studies

MATH587 - Introduction to Financial Time Series Analysis

Course Description
Course covers methods and techniques for estimating and forecasting time series in financial markets, banking, and financial services. Main topics covered include discrete stochastic processes, ARIMA, GARCH, cross-section time-series (CSTS), error correction model (ECM), vector autoregression (VAR), hazard rate and competing risk, Markov transition, and asymptotic single risk factor (ASRF) model. Examples of applications include estimating trading volume and security prices, forecasting default and payment rates, modeling the term structure, estimating bid and ask spreads, forecasting business volume and revenue, and predicting business variables based on macroeconomic variables.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
IDS587 FINANCIAL TIME SERIES

General Education Curriculum Codes
QS - (QS) Quantitative Studies

MATH601 - Groups, Rings, and Fields

Course Description
Groups including nilpotent and solvable groups, p-groups and Sylow theorems; rings and modules including classification of modules over a PID and applications to linear algebra; fields including extensions and Galois theory.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH602 - An Introduction to Commutative Algebra and Algebraic Geometry

Course Description
Affine algebraic varieties, Groebner bases, localization, chain conditions, dimension theory, singularities, completions. Prerequisite: Mathematics 601 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH603 - Representation Theory

Course Description
Representation theory of finite groups, Lie algebras and Lie groups, roots, weights, Dynkin diagrams, classification of semisimple Lie algebras and their representations, exceptional groups, examples and applications to geometry and mathematical physics. Prerequisite: Mathematics 501 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS603 REPRESENTATION THEORY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH605 - Algebraic Number Theory

Course Description
Binary quadratic forms; orders, integral closure; Dedekind domains; fractional ideals; spectra of rings; Minkowski theory; fundamental finiteness theorems; valuations; ramification; zeta functions; density of primes in arithmetic progressions. Prerequisites: Mathematics 502 or 601 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH606 - Introduction to Automorphic Representations

Course Description
Algebraic groups and their adelic points; representation theory of reductive groups over archimedean and non-archimedean fields; automorphic representations; the Satake isomorphism and the Langlands functoriality conjecture. Additional topics may include trace formulae, discreteness of the cuspidal spectrum, integral representations of L-functions, or connections to locally symmetric spaces. Prerequisite: 501, 502, 531 or equivalent, or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH611 - Algebraic Topology I

Course Description
Fundamental group and covering spaces, singular and cellular homology, Eilenberg-Steenrod axioms of homology, Euler characteristic, classification of surfaces, singular and cellular cohomology. Prerequisite: Mathematics 411 and 501 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH612 - Algebraic Topology II

Course Description
Universal coefficient theorems, Künneth theorem, cup and cap products, Poincaré duality, plus topics selected from: higher homotopy groups, obstruction theory, Hurewicz and Whitehead theorems, and characteristic classes. Prerequisite: Mathematics 611 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH620 - Smooth Manifolds

Course Description
This introductory course will cover smooth manifolds, orientation, immersions, submersions, Stokes Theorem, Frobenius Theorem, Lie groups, vector bundles, Lie groups, and additional topics (such as principal bundles) as time allows. Recommended prerequisite: Mathematics 532 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH621 - Differential Geometry

Course Description
Differentiable manifolds, fiber bundles, connections, curvature, characteristic classes, Riemannian geometry including submanifolds and variations of length integral, complex manifolds, homogeneous spaces. Prerequisite: Mathematics 532 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH623 - Complex Differential Geometry

Course Description
This intermediate level graduate course will cover: complex manifolds; complex differential calculus; holomorphic forms and vector fields; complex and holomorphic vector bundles; the Chern connection; Hermitian and Kahler manifolds; the curvature tensor of Kahler metrics; Hodge and Dolbeault theory on Kahler manifolds; cohomology of Kahler manifolds; vanishing results in Kahler geometry via Weitzenbock techniques; Ricci curvature of Kahler manifolds. Additional topics (such as statement and proof of the Calabi conjecture, Kodaira embedding) as time allows. Recommended prerequisite: Mathematics 532 or equivalent, Mathematics 620, and Mathematics 621.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH627 - Algebraic Geometry

Course Description

Projective varieties, morphisms, rational maps, sheaves, divisors, sheaf cohomology, resolution of singularities. Prerequisite: Mathematics 602 or consent of instructor advised.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum

MATH631 - Measure and Integration

Course Description

Lebesgue measure and integration; Lp spaces; absolute continuity; abstract measure theory; Radon-Nikodym Theorem; connection with probability; Fourier series and integrals. Recommended prerequisite: Mathematics 531 and 532 or equivalent.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH633 - Complex Analysis

Course Description

Complex calculus, conformal mapping, Riemann mapping theorem, Riemann surfaces. Prerequisite: Mathematics 532 or equivalent.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH635 - Functional Analysis

Course Description

Metric spaces, fixed point theorems, Baire category theorem, Banach spaces, fundamental theorems of functional analysis, Fourier transform. Prerequisite: Mathematics 631 or equivalent.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH636 - Analytic Number Theory

Course Description
Dirichlet series, the Riemann zeta function and L-functions, solutions to Diophantine equations, the circle method, exponential sums and character sums. Additional topics may include prime number theorems, sieve methods, connections to harmonic analysis, and automorphic forms. Prerequisite: 333, 531 and 502 or equivalent, or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH641 - Probability

Course Description
Designed to be a sequel to Statistical Science 711. The basic five topics are: martingales, Markov chains from an advanced viewpoint, ergodic theory, Brownian motion and its applications to random walks, Donsker's theorem and the law of the iterated logarithm, and multidimensional Brownian motion, connection to PDE's. For those who have not had 711, we will prove the law of large numbers using martingales and obtain versions of the central limit theorem from Donsker's theorem. Course requires a knowledge of measure theory. Prerequisite: Statistical Science 711 or Mathematics 631.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH653 - Elliptic Partial Differential Equations

Course Description
Fourier transforms, distributions, elliptic equations, singular integrals, layer potentials, Sobolev spaces, regularity of elliptic boundary value problems. Prerequisite: Mathematics 557 and 631 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH660 - Numerical Partial Differential Equations

Course Description
Introduction to important classes of numerical methods for partial differential equations, notably finite difference and finite element methods. Emphasis on a solid understanding of the accuracy of these methods, with a view toward the interplay between theory and practice. Topics may include finite difference and finite element methods for elliptic equations; finite difference methods for parabolic equations; and numerical methods for hyperbolic equations and conservation laws. Prerequisite: Mathematics 561, 563, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

MATH701 - Introduction to Abstract Algebra

Course Description
Groups, rings, and fields. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH702 - Combinatorics

Course Description
Permutations and combinations, generating functions, recurrence relations; topics in enumeration theory, including the Principle of Inclusion-Exclusion and Polya Theory; topics in graph theory, including trees, circuits, and matrix representations; applications. Students will be asked to write an essay on how this material relates to their research. Recommended prerequisite: Mathematics 122, 112L, 122L or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH703 - Advanced Linear Algebra

Course Description
Topics in linear algebra beyond those in a first course. For example: principal component analysis and other decompositions (singular value, Cholesky, etc.); Perron-Frobenius theory; positive semi-definite matrices; linear programming and more general convexity and optimization; basic simplicial topology; Gerschgorin theory; classical matrix groups. Applications to computer science, statistics, image processing, economics, or other fields of mathematics and science. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH711 - Topology

Course Description

Elementary topology, surfaces, covering spaces, Euler characteristic, fundamental group, homology theory, exact sequences. An assignment will ask the student to relate this course to their research.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

MATH712 - Multivariable Calculus

Course Description

Partial differentiation, multiple integrals, and topics in differential and integral vector calculus, including Green's theorem, the divergence theorem, and Stokes's theorem. An assignment will ask the student to relate this course to their research.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

MATH712D - Multivariable Calculus

Course Description

Partial differentiation, multiple integrals, and topics in differential and integral vector calculus, including Green's theorem, the divergence theorem, and Stokes's theorem. An assignment will ask the student to relate this course to their research.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

MATH713 - Topological Data Analysis

Course Description

Introduction to topology from a computational view-point, with a focus on applications. Themes include: basic notions of point-set topology, persistent homology, finding multi-scale topological structure in point cloud data. Algorithmic considerations emphasized. An assignment will ask the student to relate this course to their research.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

MATH716 - Linear Algebra and Differential Equations

Course Description
Systems of linear equations, matrix operations, vector spaces, linear transformations, orthogonality, determinants, eigenvalues and eigenvectors, diagonalization, linear differential equations, systems of differential equations with constant coefficients, applications, computer simulations. Systems of linear equations, matrix operations, vector spaces, linear transformations, orthogonality, determinants, eigenvalues and eigenvectors, diagonalization, linear differential equations, systems of differential equations with constant coefficients, applications, computer simulations. An assignment will ask the student to relate this course to their research. Intended primarily for engineering students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH716D - Linear Algebra and Differential Equations (Discussion)

Course Description
Discussion component of Mathematics 716.

Grading Basis
Unattached Labs

Units

Min Units:
0

Max Units:
0

MATH718 - Matrices and Vector Spaces

Course Description
Solving systems of linear equations, matrix factorizations and fundamental vector subspaces, orthogonality, least squares problems, eigenvalues and eigenvectors, the singular value decomposition and principal component analysis, applications to data-driven problems. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH718D - Matrices and Vector Spaces

Course Description
Solving systems of linear equations, matrix factorizations and fundamental vector subspaces, orthogonality, least squares problems, eigenvalues and eigenvectors, the singular value decomposition and principal component analysis, applications to data-driven problems. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH719 - Multivariable Calculus

Course Description
Partial differentiation, multiple integrals, and topics in differential and integral vector calculus, including Green's theorem, the divergence theorem, and Stokes's theorem. Students will describe how the material relates to their research. Intended for students who have had a course in linear algebra. Not open to students who have taken Mathematics 202, 212, or 222. Prerequisite: Mathematics 218-2, 216, 218, or 221.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH721 - Linear Algebra and Applications

Course Description
Systems of linear equations and elementary row operations, Euclidean n-space and subspaces, linear transformations and matrix representations, Gram-Schmidt orthogonalization process, determinants, eigenvectors and eigenvalues; applications. Introduction to proofs. A gateway to more advanced math courses. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH721D - Linear Algebra and Applications

Course Description
Systems of linear equations and elementary row operations, Euclidean n-space and subspaces, linear transformations and matrix representations, Gram-Schmidt orthogonalization process, determinants, eigenvectors and eigenvalues; applications. Introduction to proofs. A gateway to more advanced math courses. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH722 - Differential Geometry

Course Description
Geometry of curves and surfaces, the Serret-Frenet frame of a space curve, Gauss curvature, Cadazzi-Mainardi equations, the Gauss-Bonnet formula. The graduate student will complete an essay on how this material relates to their research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH723S - Geometry

Course Description
Euclidean geometry, inverse and projective geometries, topology (Möbius strips, Klein bottle, projective space), and non-Euclidean geometries in two and three dimensions; contributions of Euclid, Gauss, Lobachevsky, Bolyai, Riemann, and Hilbert. Research project and paper required. The graduate student will be expected to describe how this relates to their research. Prerequisite: Mathematics 122, 112L, 122L, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH730 - Probability

Course Description
Probability models, random variables with discrete and continuous distributions. Independence, joint distributions, conditional distributions. Expectations, functions of random variables, central limit theorem. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH731 - Introduction to Real Analysis

Course Description
Algebraic and topological structure of the real number system; rigorous development of one-variable calculus including continuous, differentiable, and Riemann integrable functions and the Fundamental Theorem of Calculus; uniform convergence of a sequence of functions; contributions of Newton, Leibniz, Cauchy, Riemann, and Weierstrass. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH732 - Advanced Multivariable Calculus

Course Description
Partial differentiation, multiple integrals, and topics in differential and integral vector calculus, including Green's theorem, Stokes's theorem, and Gauss's theorem for students with a background in linear algebra. Graduate students will be expected to complete an assignment showing how their research is related to the course content. Not open to students who have taken Mathematics 202, 212, or 219. Prerequisite: Mathematics 221.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH733 - Complex Analysis

Course Description
Complex numbers, analytic functions, complex integration, Taylor and Laurent series, theory of residues, argument and maximum principles, conformal mapping. An assignment will ask the student to relate this course to their research. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH740 - Advanced Introduction to Probability

Course Description
Advanced introduction to basic, non-measure theoretic probability covering topics in more depth and with more rigor than MATH 730. Topics include random variables with discrete and continuous distributions. Independence, joint distributions, conditional distributions, generating functions, Bayes' formula, and Markov chains. Rigorous arguments are presented for the law of large numbers, central limit theorem, and Poisson limit theorems. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH742 - Stochastic Models

Course Description
This course is an introduction to the theory of stochastic processes. The course begins with a review of probability theory and then covers Poisson processes, discrete-time Markov chains, martingales, continuous-time Markov chains, and renewal processes. The course also focuses on applications in operations research, finance, and engineering. No prior knowledge of measure theory is required. However, the focus of the course is on the mathematics and proofs are emphasized. Prerequisites: at least a one-semester calculus-based course in probability (MATH340/STAT230 or equivalent). A background in real analysis is helpful. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BA915 STOCHASTIC MODELS, STA715 STOCHASTIC MODELS

MATH743L - Linear Models

Course Description
Multiple linear regression and model building. Exploratory data analysis techniques, variable transformations and selection, parameter estimation and interpretation, prediction, Bayesian hierarchical models, Bayes factors and intrinsic Bayes factors for linear models, and Bayesian model averaging. The concepts of linear models from Bayesian and classical viewpoints. Topics in Markov chain Monte Carlo simulation introduced as required. Recommended prerequisite: Statistical Science 611. Recommended co-requisite: Statistical Science 602L, 702L or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA721L LINEAR MODELS

MATH751S - Nonlinear Ordinary Differential Equations

Course Description
Theory and applications of systems of nonlinear ordinary differential equations. Topics may include qualitative behavior, numerical experiments, oscillations, bifurcations, deterministic chaos, fractal dimension of attracting sets, delay differential equations, and applications to the biological and physical sciences. Research project and paper required. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH753 - Ordinary and Partial Differential Equations

Course Description
First and second order ordinary differential equations with applications, Laplace transforms, series solutions and qualitative behavior, Fourier series, partial differential equations, boundary value problems, Sturm-Liouville theory. Intended primarily for engineering and science students. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH754 - Introduction to Partial Differential Equations

Course Description
Heat, wave, and potential equations: scientific context, derivation, techniques of solution, and qualitative properties. Topics to include Fourier series and transforms, eigenvalue problems, maximum principles, Green's functions, and characteristics. Intended primarily for mathematics majors and those with similar backgrounds. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH756 - Elementary Differential Equations

Course Description
First and second order differential equations with applications; linear systems of differential equations; Fourier series and applications to partial differential equations. Additional topics may include stability, nonlinear systems, bifurcations, or numerical methods. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH757 - Introduction to Linear Programming and Game Theory

Course Description
Fundamental properties of linear programs; linear inequalities and convex sets; primal simplex method, duality; integer programming; two-person and matrix games. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH765 - Introduction to High Dimensional Data Analysis

Course Description
Geometry of high dimensional data sets. Linear dimension reduction, principal component analysis, kernel methods. Nonlinear dimension reduction, manifold models. Graphs. Random walks on graphs, diffusions, page rank. Clustering, classification and regression in high-dimensions. Sparsity. Computational aspects, randomized algorithms. An assignment will ask the student to relate this course to their research.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH766 - Mathematics of Machine Learning

Course Description
The course will explore mathematics underlying the practice and theory of various machine learning concepts and algorithms. Kernel methods, deep learning, reinforcement learning, generalization error, stochastic gradient descent, and dimension reduction or data embeddings will be introduced. The interplay between the mathematics and real applications will be a component of the course. Students can take both this course and Math 465/765 for credit. An assignment will be given asking the students to relate the material in this course to their research. Recommended prerequisite: Mathematics 230/340 and 218/216/221 and some familiarity with programming, preferably Python.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH771S - Teaching College Mathematics

Course Description
This course is designed for first year mathematics graduate students as preparation for teaching as graduate students at Duke and as professors, once they graduate. Topics include lesson planning, overview of the content in calculus courses, current issues in undergraduate mathematics education, writing and grading tests, evaluating teaching and practice teaching. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

MATH772S - Teaching College Mathematics 1

Course Description
This course is designed for first-year mathematics graduate students as preparation for teaching as graduate students at Duke and as professors, once they graduate. Topics include lesson planning, overview of the content in calculus courses, current issues in undergraduate mathematics education, writing, and grading tests, evaluating teaching, and practice teaching.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MATH773S - Teaching College Mathematics 2

Course Description
This course is designed for second year mathematics graduate students, to continue their preparation to teach as graduate students at Duke and as professors once they graduate. Topics include: pedagogical content knowledge; teaching diverse learners; current issues in undergraduate mathematics education; classroom policies; lesson planning; writing and grading formative and summative assessments; evaluating teaching; and practice teaching.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

MATH780 - Calculus and Probability

Course Description
Introduction to calculus of real-valued functions with an emphasis on applications to probability. Topics include an introduction to elementary functions, differentiation and applications, integration, and continuous probability distributions. Intended for graduate students in social and applied sciences.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH781 - Matrices and Data

Course Description
Solving systems of linear equations, matrix factorizations and fundamental vector subspaces, orthogonality, least squares problems, eigenvalues and eigenvectors, the singular value decomposition and principal component analysis, applications.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MATH789 - Fundamentals of Finance Business Models for Students in Math and Data Science

Course Description
This course provides an overview of the business models of the financial services industry - banking, asset management, and insurance. Key learning objectives include: broad understanding of how business operates in various financial industries such as source of revenues and expenses, and how quantitative skills and knowledge are applied. Focus will be on case studies, class projects and industry speakers. The course will help students decide if Finance in general is a good match with their skills and interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
IDS789 FUND FINANCE BUSINESS MODELS

MATH799 - Special Readings

Course Description
Special Readings

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

MATH895 - Internship

Course Description
Student gains practical experience related to applications of mathematics by taking a job in industry, and after the experience writes a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies. May be repeated with consent of the advisor and the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

MATH590-01 - Special Readings

Course Description
Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH590-02 - Advanced Special Topics in Mathematics

Course Description
Topics in mathematics suitable for advanced undergraduates or graduate students. Topics vary per semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH590-60 - Topics in Theory and Practice of Algorithms

Course Description
The mathematical theory of algorithms and graphs and their practical implementations. Examines the foundational mathematical structures for the behavior and analysis of algorithms from a variety of domains, with a particular emphasis on graphs. Students tie theory to practice by writing code to implement algorithms, and compare experimentally observed run-times to those predicted by the mathematical theory. Prerequisite: Computer Science 201 or corequisite of ECE 551 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH690-00 - Topics in Algebraic Geometry

Course Description
Schemes, intersection theory, deformation theory, moduli, classification of varieties, variation of Hodge structure, Calabi-Yau manifolds, or arithmetic algebraic geometry. Prerequisite: Mathematics 627 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-05 - Topics in Number Theory

Course Description
A selection of topics from algebraic number theory, arithmetic geometry, automorphic forms, analytic number theory, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-10 - Topics in Topology

Course Description
Algebraic, geometric, or differential topology. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-20 - Topics in Differential Geometry

Course Description
Lie groups and related topics, Hodge theory, index theory, minimal surfaces, Yang-Mills fields, exterior differential systems, harmonic maps, symplectic geometry. Prerequisite: Mathematics 621 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-32 - Topics in Analysis

Course Description
Topics in analysis geared towards topics of current research interest. The prerequisites will depend on the specific topic covered.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-40 - Topics in Probability Theory

Course Description
Probability tools and theory, geared towards topics of current research interest. Possible additional prerequisites based on course content in a particular semester. Prerequisites: Mathematics 230 or 340 or equivalent, and consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
STA690-40 TOPICS IN PROBABILITY

MATH690-50 - Topics in Partial Differential Equations

Course Description
Hyperbolic conservation laws, pseudo-differential operators, variational inequalities, theoretical continuum mechanics. Prerequisite: Mathematics 651 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-60 - Topics in Numerical Methods

Course Description
An advanced course in areas of numerical mathematics. Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-70 - Topics in Applied Mathematics

Course Description
An advanced course in areas of applied mathematics. Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-72 - Topics in Combinatorics

Course Description
An advanced course in areas of combinatorics. Topics vary by semester

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MATH690-82 - Topics in Mathematical Finance

Course Description
Topics of current research interest in mathematical models with relevant applications to finance. Prerequisites: Mathematics 230 or 340 or equivalent, or consent of instructor. Possible additional prerequisites depending on course content.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON690-82 TOPICS IN MATH FINANCE

MATH718D-1 - Matrices and Vector Spaces

Course Description
Solving systems of linear equations, matrix factorizations and fundamental vector subspaces, orthogonality, least squares problems, eigenvalues and eigenvectors, the singular value decomposition and principal component analysis, applications to data-driven problems. Intended primarily for students in computer science and other data-focused sciences. Graduate students will be expected to explain how this material relates to their research. Not open to students who have taken Mathematics 216 or 221. Prerequisite: Mathematics 21, 121, 106L, or 111L.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MATH790-03 - Research in Algebraic Geometry

Course Description
Mini seminars on current topics which are repeatable for credit.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MATH790-50 - Research in Differential Equations

Course Description
Mini seminars on current topics which are repeatable for credit.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MATH790-71 - Current Research in Applied Mathematics

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MATH790-77 - Current Research in Mathematical Biology

Course Description

This course will consist of three minicourses, each of which presents current research in an area of mathematical biology. Different topics will be covered in different years and students may re-take the course. Topics will be drawn from: probability theory and genomics, mathematical methods in biochemistry and cell biology, applications of topology and geometry to genomics and protein folding, heart physiology and mathematical issues in cardiac arrhythmias, biofluid mechanics, mathematical methods in kidney function, mathematical questions in image reconstruction, analysis of large data sets, and the evolution of viruses.

Grading Basis

Graded

Units

Min Units:

1

Max Units:

1

MATH790-90 - Minicourse in Advanced Topics

Course Description

Mini seminars on current topics which are repeatable for credit.

Grading Basis

Credit / No Credit

Units

Min Units:

1

Max Units:

1

MATH790-92 - Foundational Minicourses on Topics in Math for Graduate Students

Course Description

Minicourses introducing various math topics for graduate students outside of math. Topics include differential calculus, integral calculus, multivariable calculus, linear algebra, discrete probability, and matrix decompositions and data.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

1

MATH790-95 - Advanced Topics in Mathematics

Course Description

Advanced Topics in Mathematics. The content of this course will vary. An assignment or assignments will have the graduate student relate this course to their research.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

ME510 - Diffraction and Spectrometry of Materials

Course Description
This course focuses on the fundamentals and applications of x-ray/neutron/electron scattering for the study of materials, with an emphasis on crystalline solids. The class will cover topics in diffraction for the study of the atomic structure of materials, as well as spectrometry to investigate microscopic dynamics and composition. The students should have a background in solid state physics/chemistry, quantum mechanics, materials science, and mathematics including Fourier transforms and complex numbers, convolution product. Open to graduate students; instructor consent required for undergraduate students to enroll.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME511 - Computational Materials Science

Course Description
This course will cover modern computational techniques for the prediction of materials properties, beginning from the scale of electrons and atoms and connecting to materials challenges in experiments today. Subjects covered will include Schroedinger's equation and density functional theory, molecular dynamics, and so-called multiscale approaches to connect quantities computed at the nanoscale to macroscopic properties. The class will incorporate specific examples as explicit computer exercises. The course is expected to provide an atomic-scale understanding of materials for both students with a primarily computational interest and those students whose research is primarily experimental. Open to graduate students; instructor consent required for undergraduate students to enroll.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME513 - Nanobiomechanics

Course Description
The course consists of didactic lectures and many laboratory demonstrations and real experiments done by the students themselves. Topics include: Principles of single-molecule force spectroscopy (SMFS), SMFS experimental techniques, resolution and resolution limitations; Entropic and enthalpic elasticity of (bio)polymers; Structure and nanomechanics of DNA, polysaccharides, and proteins; Mechanisms of spontaneous folding, misfolding and refolding of proteins; Chaperones-assisted protein refolding; Principles of computer modeling of biopolymer mechanics; Development and characterization of novel, protein-based nanostructured, rationally designed biomaterials with unique mechanical properties. Open to graduate students; instructor consent required for undergraduate students to enroll.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME514 - Properties and Characterization of Polymeric Materials

Course Description
An introductory graduate-level course in soft condensed matter physics dealing with the synthesis, structure, and properties of polymers, biopolymers and polymeric materials. The course provides a brief introduction to polymer syntheses based on chemical reaction kinetics, it covers polymer characterization and a broad range of properties of polymers and polymeric materials, including solution properties, thermal properties, rheological and mechanical properties, and surface properties. Some topics will be explored in more detail through semester projects, presented at a Polymer Symposium at the end of the semester. Open only to graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME529 PROPER & CHARACT POLYMERIC MAT

ME516 - Thin-Film Photovoltaic Technology

Course Description
This course will focus in on a promising class of solar cells based on thin-film absorbers, some of which are already commercialized (e.g., CdTe, CIGS), while others are on the cutting edge of new photovoltaics technology (e.g., perovskites). The course will employ a combination of lecture, directed reading and hands-on approaches. The hands-on component of the course will involve fabricating PV devices and employing contemporary characterization and modeling tools to evaluate device performance. Specific techniques and the intellectual framework are more generally applicable to other PV and electronic devices. Recommended prerequisite: ECE 230 or related familiarity with electronic properties of materials. Open to graduate students; instructor consent required for undergraduate students to enroll.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE516 THIN-FILM PV TECHNOLOGY

ME524 - Introduction to the Finite Element Method

Course Description
Investigation of the finite element method as a numerical technique for solving linear ordinary and partial differential equations, using rod and beam theory, heat conduction, elastostatics and dynamics, and advective/diffusive transport as sample systems. Emphasis placed on formulation and programming of finite element models, along with critical evaluation of results. Topics include: Galerkin and weighted residual approaches, virtual work principles, discretization, element design and evaluation, mixed formulations, and transient analysis. Prerequisites: a working knowledge of ordinary and partial differential equations, numerical methods, and programming in FORTRAN or MATLAB.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE530 FINITE ELEMENT METHOD

ME525 - Nonlinear Finite Element Analysis

Course Description
Formulation and solution of nonlinear initial/boundary value problems using the finite element method. Systems include nonlinear heat conduction/diffusion, geometrically nonlinear solid and structural mechanics applications, and materially nonlinear systems (for example, elastoplasticity). Emphasis on development of variational principles for nonlinear problems, finite element discretization, and equation-solving strategies for discrete nonlinear

Grading Basis
Graded

Course Typically Offered
Occasionally

Equations. Topics include: Newton-Raphson techniques, quasi-Newton methods, solution of nonlinear transient problems, and treatment of constraints in a nonlinear framework. An independent project, proposed by the student, is required. Prerequisite: Civil and Environmental Engineering 530/Mechanical Engineering 524, or consent of instructor.

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE630 NONLIN FIN ELEMENT ANALY

ME527 - Buckling of Engineering Structures

Course Description
An introduction to the underlying concepts of elastic stability and buckling, development of differential equation and energy approaches, buckling of common engineering components including link models, struts, frames, plates, and shells. Consideration will also be given to inelastic behavior, postbuckling, and design implications.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE647 BUCKLING EGR STRUCTURES

ME531 - Engineering Thermodynamics

Course Description
Axiomatic formulations of the first and second laws. General thermodynamic relationships and properties of real substances. Energy, availability, and second law analysis of energy conversion processes. Reaction and multiphase equilibrium. Power generation. Low temperature refrigeration and the third law of thermodynamics. Thermodynamic design.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ME532 - Convective Heat Transfer

Course Description
Models and equations for fluid motion, the general energy equation, and transport properties. Exact, approximate, and boundary layer solutions for laminar flow heat transfer problems. Use of the principle of similarity and analogy in the solution of turbulent flow heat transfer. Two-phase flow, nucleation, boiling, and condensation heat and mass transfer.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ME535 - Biomedical Microsystems

Course Description
he objective of the course is to introduce students to the interdisciplinary field of biomedical microsystems with an emphasis on biomedical microelectromechanical systems (bioMEMS) and microtechnologies. Topics include Scaling laws, Micropatterning of substrates and cells, Microfluidics, Molecular biology on a chip, Cell-based chips for biotechnology, BioMEMS for cell biology, Tissue microengineering, and Microfabricated implants and sensors. Open to graduate students; instructor consent required for undergraduate students to enroll.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME536 - Compressible Fluid Flow

Course Description
Basic concepts of the flow of gases from the subsonic to the hypersonic regime. One-dimensional wave motion, the acoustic equations, and waves of finite amplitude. Effects of area change, friction, heat transfer, and shock on one-dimensional flow. Moving and oblique shock waves and Prandtl-Meyer expansion. Prerequisite: Mechanical Engineering 336L or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ME538 - Physicochemical Hydrodynamics

Course Description
An introduction to the fundamental principles of physicochemical hydrodynamics with an emphasis on the coupling between transport processes and interfacial phenomena. Topics include Brownian motion and molecular diffusion, electrokinetics and electrohydrodynamics, capillary and wetting. Through homework sets and a course project, the students will develop physical intuition and scaling tools to single out the dominant physicochemical process in a complex system. Prerequisite: Mechanical Engineering 336L or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME539 - Interfacial Transport Phenomena for Energy Technologies

Course Description
The main topics are transport phenomena taking place on interfaces in renewable/sustainable energy technology. These transport phenomena comprise of charge transport (ions, electrons), heat transfer, and mass transfer (e.g. diffusion), sometimes coupled with chemical reactions (e.g. catalytic, electrochemical, photochemical.). We will study these transport phenomena at interfaces, especially in the micro- and nano-scale and apply this knowledge to energy conversion and storage processes. These interfacial transport phenomena are essential for photovoltaic cells, fuel cells, batteries, solarthermal devices, thermoelectric devices, and many others. Open to graduate students; instructor consent required for undergraduate students to enroll. Recommended prerequisite: Mechanical Engineering 431 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME541 - Intermediate Dynamics: Dynamics of Very High Dimensional Systems

Course Description
Dynamics of very high dimensional systems. Linear and nonlinear dynamics of a string as a prototypical example. Equations of motion of a nonlinear beam with tension. Convergence of a modal series. Self-adjoint and non-self-adjoint systems. Orthogonality of modes. Nonlinear normal modes. Derivation of Lagrange's equations from Hamilton's Principle including the effects of constraints. Normal forms of kinetic and potential energy. Component modal analysis. Asymptotic modal analysis.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE625 INTERMEDIATE DYNAMICS

ME543 - Energy Flow and Wave Propagation in Elastic Solids

Course Description
Derivation of equations for wave motion in simple structural shapes: strings, longitudinal rods, beams and membranes, plates and shells. Solution techniques, analysis of systems behavior. Topics covered include: nondispersive and dispersive waves, multiple wave types (dilational, distortion), group velocity, impedance concepts including driving point impedances and moment impedances. Power and energy for different cases of wave propagation. Prerequisites: Engineering 244L and Mathematics 353 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE626 ENERGY FLOW & WAVE PROPAGATION

ME544 - Advanced Mechanical Vibrations

Course Description
Advanced mechanical vibrations are studied primarily with emphasis on application of analytical and computational methods to machine design and vibration control problems. Equations of motion are developed using Lagrange's equations. A single degree-of-freedom system is used to determine free vibration characteristics and response to impulse, harmonic periodic excitations, and random. The study of two and three degree-of-freedom systems includes the determination of the eigenvalues and eigenvectors, and an in-depth study of modal analysis methods. The finite element method is used to conduct basic vibration analysis of systems with a large number of degrees of freedom. The student learns how to balance rotating machines, and how to design suspension systems, isolation systems, vibration sensors, and tuned vibration absorbers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ME555 - Advanced Topics in Mechanical Engineering

Course Description

Opportunity for study of advanced subjects related to programs within mechanical engineering tailored to fit the requirements of a small group. Approval of director of undergraduate or graduate studies required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

4

ME560S - Materials Science and Engineering Seminar

Course Description

This course is a seminar class open to all students with an interest in Materials Science & Engineering (MS&E) at Duke University. For the graduate students in the Duke University Program in MS&E (Masters and Ph.D. tracks), this seminar course is a mandatory component. The course generally consists of four external seminars (with Q&A opportunities for all interested students after the seminar) and of eight 'internal' meeting periods with presentations by Duke graduate students. Each internal seminar course session will generally feature one 'journal' presentation and one 'original research' presentation, designed for twenty minutes presentation time plus discussion.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

1

ME562 - Materials Synthesis and Processing

Course Description

Materials form the basis of most modern technologies, whether referring to energy, data processing, medical/health or consumer product application. While materials properties are central to the application, the techniques used for processing functional materials into films, crystals or bulk form, with carefully tailored properties, is no less important and will form the basis of the class. Additionally, the course will expose students to current materials processing/application research thrusts at Duke.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

ME571 - Aerodynamics

Course Description

Fundamentals of aerodynamics applied to wings and bodies in subsonic and supersonic flow. Basic principles of fluid mechanics analytical methods for aerodynamic analysis. Two-and three-dimensional wing theory, slender-body theory, lifting surface methods, vortex and wave drag. Brief introduction to vehicle design, performance and dynamics. Special topics such as unsteady aerodynamics, vortex wake behavior, and propeller and rotor aerodynamics. This course is open only to undergraduate seniors and graduate students. Prerequisites: Mechanical Engineering 336L or equivalent, and Mathematics 353 or equivalent.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:
3

Max Units:
3

ME572 - Engineering Acoustics

Course Description
Fundamentals of acoustics including sound generation, propagation, reflection, absorption, and scattering. Emphasis on basic principles and analytical methods in the description of wave motion and the characterization of sound fields. Applications including topics from noise control, sound reproduction, architectural acoustics, and aerodynamic noise. Occasional classroom or laboratory demonstration. This course is open only to undergraduate seniors and graduate students. Prerequisites: Mathematics 353 or equivalent or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME582 - Applications in Data and Materials Science

Course Description
AI principles will be applied to a series of materials science example problems, each taught in a module by an expert in materials science or data science. Each module will span 2-3 weeks, demonstrating an array of data science/AI methods in unique materials case studies in advancing discovery or design principles. Prerequisites: ME 221 or equivalent, introductory machine learning course.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI583 APPL IN DATA & MATERIALS SCI

ME591 - Research Independent Study in Mechanical Engineering or Material Science

Course Description
Research project mentored by an instructor with related interests and expertise. The project is expected to be graduate-level work. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ME592 - Research Independent Study in Mechanical Engineering or Material Science

Course Description
Research project mentored by an instructor with related interests and expertise. The project is expected to be graduate-level work. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME593 - Research Independent Study in Mechanical Engineering or Material Science

Course Description
Research project mentored by an instructor with related interests and expertise. The project is expected to be graduate-level work. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ME594 - Research Independent Study in Mechanical Engineering or Material Science

Course Description
Research project mentored by an instructor with related interests and expertise. The project is expected to be graduate-level work. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ME627 - Linear System Theory

Course Description
Construction of continuous and discrete-time state space models for engineering systems, and linearization of nonlinear models. Applications of linear operator theory to system analysis. Dynamics of continuous and discrete-time linear state space systems, including time-varying systems. Lyapunov stability theory. Realization theory, including notion of controllability and observability, canonical forms, minimal realizations, and balanced realizations. Design of linear feedback controllers and dynamic observers, featuring both pole placement and linear quadratic techniques. Introduction to stochastic control and filtering. Prerequisites: Electrical and Computer Engineering 382 or Mecahnical Engineering 344, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE627 LINEAR SYSTEM THEORY

ME631 - Intermediate Fluid Mechanics

Course Description
A survey of the principal concepts and equations of fluid mechanics, fluid statics, surface tension, the Eulerian and Lagrangian description, kinematics, Reynolds transport theorem, the differential and integral equations of motion, constitutive equations for a Newtonian fluid, the Navier-Stokes equations, and boundary conditions on velocity and stress at material interfaces.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ME634 - Turbulence 1

Course Description
This is an introductory course on the subject of turbulence in fluids. The focus is on understanding the fundamental physical processes and mechanisms governing the behavior of turbulent flows. The course covers the following - overview of physical and mathematical properties of Navier-Stokes equation; kinematics, dynamics and energetics of turbulent flows; Kolmogorov theories of turbulence; Richardson energy cascade; wall-bounded turbulent flows; particle dispersion, clustering and collisions in turbulent flows. Prerequisite: ((CEE 301L or ME 336L) and Mathematics 353) or graduate standing. Recommended prerequisite: an introductory course on fluid mechanics, and a course on differential equations.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CEE688 TURBULENCE 1

ME639 - Computational Fluid Mechanics and Heat Transfer

Course Description
An exposition of numerical techniques commonly used for the solution of partial differential equations encountered in engineering physics. Finite-difference schemes (which are well-suited for fluid mechanics problems); notions of accuracy, conservation, consistency, stability, and convergence. Recent applications of weighted residuals methods (Galerkin), finite-element methods, and grid generation techniques. Through specific examples, the student is guided to construct and assess the performance of the numerical scheme selected for the particular type of transport equation (parabolic, elliptic, or hyperbolic).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ME671 - Advanced Aerodynamics

Course Description
Advanced topics in aerodynamics. Conformal transformation techniques. Three-dimensional wing theory, optimal span loading for planar and nonplanar wings. Ground effect and tunnel corrections. Propeller theory. Slender wing theory and slender body theory, transonic and supersonic area rules for minimization of wave drag. Numerical methods in aerodynamics including source panel and vortex lattice methods. Prerequisite: Mechanical Engineering 571.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ME672 - Unsteady Aerodynamics

Course Description
Analytical and numerical methods for computing the unsteady aerodynamic behavior of airfoils and wings. Small disturbance approximation to the full potential equation. Unsteady vortex dynamics. Kelvin impulse and apparent mass concepts applied to unsteady flows. Two-dimensional unsteady thin airfoil theory. Time domain and frequency domain analyses of unsteady flows. Three-dimensional unsteady wing theory. Introduction to unsteady aerodynamic behavior of turbomachinery. Prerequisite: Mechanical Engineering 571.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ME676 - Advanced Acoustics

Course Description
Analysis methods in acoustics including wave generation, propagation, reflection, absorption, and scattering; sound propagation in a porous material; coupled structure acoustic systems; acoustic singularities: monopoles, dipoles, quadrupoles; radiation from flat surfaces; classical radiation and scattering solutions for cylinders and spheres; Green's functions, Radiation conditions, Modal analysis; sound fields in rooms and enclosures: energy methods; dissipation in fluid media; introduction to nonlinear effects. This course is open only to graduate students with some prior background in acoustics and applied mathematics. Prerequisites: Mechanical Engineering 572 or equivalent.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ME711 - Nanotechnology Materials Lab

Course Description
This course provides an introduction to advanced methods for the characterization and fabrication of materials, nanostructures, and devices. Cleanroom methods to be covered include lithography, evaporation, and etching. Characterization methods include electron microscopy, atomic force microscopy, X-ray photoelectron spectroscopy, and optical spectroscopy. Students will receive an overview of the techniques in the Shared Materials Instrumentation Facility through lectures and demonstrations. In the lab section, each student will engage in a project that focuses on those capabilities that are needed for their research, and will receive training and certification on that equipment.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE721 NANOTECHNOLOGY MATERIALS LAB

ME717S - Biological Engineering Seminar Series (CBIMMS and CBTE)

Course Description
Seminar series featuring in alternate weeks invited speakers and pre-seminar discussions. Research topics in biological engineering, with emphasis on bioinspired materials and materials systems, biomolecular, and tissue engineering. Enrollment is required of all BIMMS and BTE certificate program students in their first and second year. Open to others for credit or audit. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BME711S BIOLOGICAL ENGINEERING SEM

ME718S - Biological Engineering Seminar Series (CBIMMS and CBTE)

Course Description
Seminar series featuring in alternate weeks invited speakers and pre-seminar discussions. Research topics in biological engineering, with emphasis on bioinspired materials and materials systems, biomolecular, and tissue engineering. Enrollment is required of all BIMMS and BTE certificate program students in their first and second year. Open to others for credit or audit. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BME712S BIOLOGICAL ENGINEERING SEM

ME742 - Nonlinear Mechanical Vibration

Course Description
A comprehensive treatment of the role of nonlinearities in engineering dynamics and vibration. Analytical, numerical, and experimental techniques are developed within a geometrical framework. Prerequisite: Mechanical Engineering 541 or 544 or equivalent.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ME758S - Curricular Practical Training

Course Description
Curricular Practical Training. Student gains practical Mechanical Engineering and Materials Science experience by taking a job in industry and writing a report about this experience. Course requires prior consent from the student's advisor and from the Director of Graduate Studies and may be repeated with consent of the advisor and the Director of Graduate Studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

ME759 - Special Readings in Mechanical Engineering

Course Description
Individual readings in advanced study and research areas of mechanical engineering. Approval of director of graduate studies required. 1 to 3 units.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

ME775 - Aeroelasticity

Course Description
A study of the statics and dynamics of fluid/structural interaction. Topics covered include static aeroelasticity (divergence, control surface reversal), dynamic aeroelasticity (flutter, gust response), unsteady aerodynamics (subsonic, supersonic, and transonic flow), and a review of the recent literature including nonlinear effects such as chaotic oscillations. Prerequisite: Mathematics 230 and consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

ME789 - Internship in Mechanical Engineering

Course Description
Student gains practical mechanical engineering experience by taking a job in industry, and writing a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies. May be replaced with consent of the advisor and the director of graduate studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
3

MEDPHY500 - Radiation Physics

Course Description
A course covering the basics of ionizing and non-ionizing radiation, atomic and nuclear structure, basic nuclear and atomic physics, radioactive decay, interaction of radiation with matter, and radiation detection and dosimetry. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS521 RADIATION PHYSICS

MEDPHY500K - Radiation Physics

Course Description

A course covering the basics of ionizing and non-ionizing radiation, atomic and nuclear structure, basic nuclear and atomic physics, radioactive decay, interaction of radiation with matter, and radiation detection and dosimetry. Instructor consent required. Taught at Duke Kunshan University.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

MEDPHY505 - Anatomy and Physiology for Medical Physicists

Course Description

A course focused on medical terminology, biochemistry pertaining to MP, basic Anatomy and physiology, elementary tumor and cancer biology, and overview of disease in general. Upon completion, the student should: (a) understand anatomic structures, their relationships, their cross-sectional and planar projections, and how they are modified by attenuation and artifacts in the final images; (b) understand the physiology underlying radionuclide images, (c) understand how (a) - (b) are modified by disease, (d) identify anatomical entities in medical images (different modalities), and (e) identify basic features in medical images (e.g., Pneumothrax in chest radiographs, microcalcoifications in mammograms). Consent of instructor required.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

MEDPHY505K - Anatomy and Physiology for Medical Physicists

Course Description

A course focused on medical terminology, biochemistry pertaining to MP, basic Anatomy and physiology, elementary tumor and cancer biology, and overview of disease in general. Upon completion, the student should: (a) understand anatomic structures, their relationships, their cross-sectional and planar projections, and how they are modified by attenuation and artifacts in the final images; (b) understand the physiology underlying radionuclide images, (c) understand how (a) - (b) are modified by disease, (d) identify anatomical entities in medical images (different modalities), and (e) identify basic features in medical images. Instructor consent required. Taught at Duke Kunshan University.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

MEDPHY507 - Radiation Biology

Course Description

An introduction to radiation biology. This course will cover the biological effects of radiation, including mechanisms of DNA damage, and normal tissue injury. The principle context is with relevance to radiation therapy treatment. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

MEDPHY507K - Radiation Biology

Course Description
An introduction to radiation biology. This course will cover the biological effects of radiation, including mechanisms of DNA damage, and normal tissue injury. The principle context is with relevance to radiation therapy treatment. Taught at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MEDPHY510 - Radiation Protection

Course Description
Course discusses the principles of radiation protection dealing with major forms of ionizing and non-ionizing radiation, the physics and chemistry of radiation biology, biological effects of ionizing and non-ionizing radiations (lasers, etc.) at cellular and tissue levels, radiation protection quantities and units, medical HP issues in clinical environments, radiation safety regulations, and basic problem solving in radiation safety. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MEDPHY510K - Radiation Protection

Course Description
Course discusses the principles of radiation protection dealing with major forms of ionizing and non-ionizing radiation, the physics and chemistry of radiation biology, biological effects of ionizing and non-ionizing radiations (lasers, etc.) at cellular and tissue levels, radiation protection quantities and units, medical HP issues in clinical environments, radiation safety regulations, and basic problem solving in radiation safety. Consent of instructor required. Taught at Duke-Kunshan-University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences

MEDPHY520 - Radiation Therapy Physics

Course Description
This introductory course has a clinical orientation, and reviews the rationale, basic science, methods, instrumentation, techniques and applications of radiation therapy to the treatment of a wide range of human diseases. Major radiation modalities are covered including low and high energy photon therapy, electron and proton therapy, and low and high-dose rate brachytherapy. The clinical process of treatment, methods of calculating dose to patient, and the role of the medical physicist in radiation oncology clinic, are covered in detail. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MEDPHY520K - Radiation Therapy Physics

Course Description
This introductory course has a clinical orientation, and reviews the rationale, basic science, methods, instrumentation, techniques and applications of radiation therapy to the treatment of a wide range of human diseases. Major radiation modalities are covered including low and high energy photon therapy, electron and proton therapy, and low and high-dose rate brachytherapy. The clinical process of treatment, methods of calculating dose to patient, and the role of the medical physicist in radiation oncology clinic, are covered in detail. Consent of instructor required. Taught at Duke-Kunshan-University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences

MEDPHY530 - Modern Medical Diagnostic Imaging System

Course Description
This course covers the mathematics, physics and instrumentation of several modern medical imaging modalities starting with a review of applicable linear systems theory and relevant principles of physics. Modalities studied include X-ray radiography (film-screen and electronic), computerized tomography, ultrasound and nuclear magnetic resonance imaging. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS523 MODERN DIAGNOSTIC IMAGING SYST

MEDPHY530K - Modern Diagnostic Imaging Systems

Course Description
This course covers the mathematics, physics and instrumentation of several modern medical imaging modalities starting with a review of applicable linear systems theory and relevant principles of physics. Modalities studied include X-ray radiography (film-screen and electronic), computerized tomography, ultrasound and nuclear magnetic resonance imaging. Consent of instructor required. Taught at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences

MEDPHY541K - Nuclear Medicine Physics

Course Description

This course addresses the role of physics in nuclear medicine, particularly with regard to single-photon-emission and positron-emission imaging. Course topics include (i) relevant basic physics, such as radioactive decay and the interaction of radiation with matter, (ii) instrumentation methods for single-photon-emission and positron-emission imaging, (iii) tomographic acquisition and image reconstruction, and (iv) quantitative analysis of images. The course will be taught at Duke Kunshan University and covers the same topics as the Nuclear Medicine Physics course (MPH 541) taught at Duke University. Instructor consent required.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

MEDPHY714 - Clinical Dosimetry Measurements

Course Description

This course covers advanced topics in clinical radiation dosimetry that is pertinent to both KV and MV energy range. Recommended prerequisite: Medical Physics 500 and 505.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

3

MEDPHY715 - Advanced Topics in Radiation Detection and Dosimetry

Course Description

This series of lectures covers the topics in radiation detectors, measurements and signal processing. The basics of various types of radiation detectors used in nuclear, medical and health physics and their usage are discussed in detail. Prerequisites: Medical Physics 500 and 505.

Grading Basis

Graded

Units

Min Units:

1

Max Units:

1

MEDPHY716 - Shielding Design for Medical X-ray Imaging Facilities

Course Description

This course provides an advanced level education in shielding design for medical x-ray imaging facilities. Competency in this area is required by professional certification boards such as the American Board of Medical Physics (ABMP) in the MHP Specialty and the American Board of Health Physics (ABHP). This course will also be useful for Diagnostic Imaging (DI) track students as the topic will give extra preparation to the students before DI residency training. Competency is this area is required by the American Board of Radiology in the DI Specialty.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

MEDPHY717 - Techniques in Mathematical Oncology

Course Description

Advancements in applied mathematics and high-performance scientific computing are increasingly shaping modern medicine and biology, particularly in cancer research. This course addresses a growing need for interdisciplinary training that bridges mathematical modeling, computational methods, and biomedical applications. By integrating mechanistic and data-driven approaches, students will develop the skills necessary to analyze and simulate complex biological systems, with a focus on tumor dynamics, treatment resistance, and medical imaging. The course is particularly valuable for students in medical physics, computational biology, biophysics, and/or biomedical engineering who seek to apply mathematical and computational frameworks to real-world challenges in oncology and beyond.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

MEDPHY718 - Clinical Practicum and Shadowing (Medical Health Physics)

Course Description

This practicum course provides hands-on experiences in various hospital health physics functions, in RAM lab oversight, in X-Ray room shielding and verification, and in license preparation experience under NRC/States oversight. The course includes shadowing a clinician, technologist, and physicist, while performing their routine clinical tasks.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

MEDPHY718K - Clinical Practicum and Shadowing (Medical Health Physics)

Course Description

This practicum course provides hands-on experiences in various hospital health physics functions, in RAM lab oversight, in X-Ray room shielding and verification, and in license preparation experience under NRC/States oversight. The course includes shadowing a clinician, technologist, and physicist, while performing their routine clinical tasks. Taught at Duke Kunshan University.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

MEDPHY722 - Advanced Photon Beam Radiation Therapy

Course Description

This course will cover the physics and clinical application of advanced external beam photon therapies with special emphasis on IMRT. Prerequisite: Medical Physics 520.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

MEDPHY722K - Advanced Photon Beam Radiation Therapy

Course Description
This course will cover the physics and clinical application of advanced external beam photon therapies with special emphasis on IMRT. Taught at Duke Kunshan University. Prerequisite: Medical Physics 520K.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MEDPHY723 - Advanced Radiation Therapy Topics and Procedures

Course Description
The first section, Clinical Dosimetry and Commissioning, is focused on clinical dosimetry, patient treatment related measurement and clinical calibration, quality assurance, and commissioning. In the second section, Advanced Procedures for SRS/SBRT, technical procedures and methodology for imaging, image guidance, motion management, image fusion, delivery technologies, treatment adaptation, dose verification, quality assurance, and treatment assessment related to stereotactic radiosurgery (SRS) and stereotactic body radiation therapy (SBRT) will be introduced. Open only to Medical Physics master's and PhD students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MEDPHY723K - Advanced Brachtherapy / Special Topics and Procedures

Course Description
Covers advanced treatment procedures including image-guided radiation therapy as well as its application in stereotactic radiation therapy and stereotactic radiosurgery. Instructor consent required. Open to graduate students at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
3

MEDPHY725 - Physics and Clinical Applications of Brachytherapy

Course Description
The course is designed to combine traditional lectures and clinical physics practicum on the topic of LDR (low dose rate) and HDR (high dose rate) brachytherapy. Instructor consent required. Prerequisite: Medical Physics 520.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

MEDPHY726 - Practicum on Monte Carlo Methods in Medical Physics

Course Description

This course focuses on the fundamentals of Monte-Carlo simulations and provides hands-on experience with clinical Monte-Carlo codes used in medical dosimetry. The course will introduce software such as MCNP, EGS, FLUKA, GEANT and Penelope and companion data analysis software ROOT, PAW and CERNLIB. Students will study at least one major code and will perform two or more projects based on a clinically relevant task. Prerequisites: Calculus, modern physics, and programming. Knowledge of C, C++, or Fortran is a plus.

Grading Basis

Graded

Units

Min Units:

1

Max Units:

3

MEDPHY726K - Practicum on Monte Carlo Methods in Medical Physics

Course Description

This course focuses on the fundamentals of Monte-Carlo simulations and provides hands-on experience with clinical Monte-Carlo codes used in medical dosimetry. The course will introduce software such as MCNP, EGS, FLUKA, GEANT and Penelope and companion data analysis software ROOT, PAW and CERNLIB. Students will study at least one major code and will perform two or more projects based on a clinically relevant task. Prerequisites: Calculus, modern physics, and programming. Knowledge of C, C++, or Fortran would be a plus. Consent of instructor required. Taught at Duke Kunshan University.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

3

MEDPHY727 - External Beam Radiotherapy Planning

Course Description

This course focuses on external beam treatment planning and covers both fundamental knowledge of treatment planning and advanced practice of treatment planning at common clinical sites. Prerequisites: MEDPHY 520, 500 and 505.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

MEDPHY728 - Clinical Practicum and Shadowing (RT)

Course Description

The course gives hands on experience in practical aspects of medical physics as applied to radiation therapy. Special emphasis is given to the operation of various therapy units and dose measuring devices, techniques of measuring the characteristics of radiation beams, commissioning and quality assurance checks for radiation producing devices in the clinic. The course includes shadowing a clinician, technologist, or physicist, while performing their routine clinical tasks. Consent of instructor required.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

MEDPHY728K - Clinical Practicum and Shadowing (RT)

Course Description
The course gives hands-on experience in practical aspects of medical physics as applied to radiation therapy. Special emphasis is given to the operation of various therapy units and dose measuring devices, techniques of measuring the characteristics of radiation beams, commissioning and quality assurance checks for radiation producing devices in the clinic. The course includes shadowing a clinician, technologist, or physicist, while performing their routine clinical tasks. The course has 3 components, each of which may be taken for 1 credit. Some components are offered in Summer Session II at Duke University, while other components are offered in Spring Semester at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

MEDPHY729 - Medical Physics Clinical Internship

Course Description
The course offers an internship opportunity to students who wish to gain a more hands-on, practical experience in clinical aspects of the practice of medical physics. The internship will be conducted in a clinical facility under the supervision of a clinical a medical physicist.

Grading Basis
Credit / No Credit

Units

Min Units:
10

Max Units:
10

MEDPHY731K - Advanced Medical Imaging Physics

Course Description
The course includes advanced topics in diagnostic imaging including linear system theory, image quality metrology, digital radiography and mammography, new advances on three-dimensional imaging modalities, MRI, CT, ultrasound, and evaluation of diagnostic imaging methods. Prerequisite: Medical Physics 530K. Taught at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MEDPHY732 - Advanced Topics of Ionizing-based Imaging Modalities

Course Description
This course covers advanced topics in ionizing-based imaging modalities such as X-ray and CT imaging, including linear system theory, image quality metrology, digital radiography and mammography. Instruction will consist of didactic lectures accompanied by hands-on laboratory exercises (practicum).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MEDPHY734 - Advanced Topics of Non-ionizing-based Imaging Modalities

Course Description

This course covers advanced topics in non-ionizing Imaging modalities such as Ultrasound and MR imaging, including speckle statistics, Doppler imaging, advanced MR pulse sequences, MR angiography, flow and diffusion etc. Instruction will consist of didactic lectures accompanied by hands-on laboratory exercises (practicum).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MEDPHY734K - Advanced Topics of Non-ionizing-based Imaging Modalities

Course Description

This course covers advanced topics in non-ionizing Imaging modalities such as Ultrasound and MR imaging, including speckle statistics, Doppler imaging, advanced MR pulse sequences, MR angiography, flow and diffusion etc. Instruction will consist of didactic lectures accompanied by hands-on laboratory exercises (practicum). Offered at Duke Kunshan University. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

MEDPHY735 - Advanced Topics in Magnetic Resonance Imaging

Course Description

This course covers advanced topics in magnetic resonance imaging (MRI), including image acquisition and reconstruction, artifact correction, functional MRI, and diffusion MRI. Instruction will consist of lectures accompanied by hands-on exercises in Matlab. Students will also have the opportunity to perform different types of MRI scans such as functional and diffusion MRI on each other and to reconstruct and analyze the acquired MRI data. Prerequisite: MEDPHY 734 or BME 546 or a similar course, and at least some basic experience with Matlab.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MEDPHY738 - Radiology in Practice

Course Description

Designed to complement Biomedical Engineering 333 Modern Diagnostic Imaging Systems. Review and real-life exercises on principles of modern medical imaging systems with emphasis on the engineering aspects of image acquisition, reconstruction and visualization, observations of imaging procedures in near clinical settings, and hands-on experience with the instruments. Modalities covered include ultrasound, CT, MRI, nuclear medicine and optical imaging. Prerequisite: Biomedical Engineering 333 or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME848L RADIOLOGY IN PRACTICE

MEDPHY743 - Basic Concepts of Internal Radiation Dosimetry

Course Description
This course covers the physical and anatomical/physiological foundations of internal radiation dosimetry. Topics covered include definition of dose, absorbed fractions, residence times and methods to determine them, and the MIRD methodology. Strategies to convert small animal radiopharmaceutical biodistribution data to humans will also be covered. Prerequisites: Medical Physics 500 and 505.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

MEDPHY745 - Advanced Topics in Nuclear Medicine

Course Description
This course covers advanced topics in radionuclide-based imaging modalities such as PET and SPECT, including image acquisition, image reconstruction, detector and detection theory, radionuclides, etc. and therapeutic applications of radionuclides. Instruction will consist of didactic lectures accompanied by hands-on laboratory exercises (practicum).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MEDPHY746 - Radiopharmaceutical Chemistry

Course Description
The course will cover radiochemistry and production of various radiopharmaceuticals. The course will be conducted with lecture but may include some practical demonstrations. Prerequisite: Medical Physics 500 and 505.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

MEDPHY749K - Clinical Practicum and Shadowing (Nuclear Medicine)

Course Description
The course gives hands on experience in clinical nuclear medicine. It covers topics drawn from gamma cameras, PET systems, surgical probes, dose calibrators, technetium generators, and well counters, and it is aimed at learning operation principles, calibration, and quality control methods. Depending on the number of credit hours, students will spend time in some or all of the following: the PET facility, nuclear cardiology, nuclear medicine, and the radiopharmacy, and the course may include shadowing a clinician, technologist, or physicist while performing. Taught at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

MEDPHY751 - Medical Physics Seminar

Course Description
Medical physics is the application of the concepts and methods of physics to the diagnosis and treatment of human disease. This course consists of weekly lectures covering broad topics in medical physics including diagnostic imaging, radiation oncology, radiation safety, and nuclear medicine. Lectures will be given by invited speakers drawn from many university and medical center departments including radiology, physics, radiation safety, and radiation oncology. Recommended prerequisite: background in engineering or physics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

MEDPHY751K - Seminars in Medical Physics

Course Description
Medical physics is the application of the concepts and methods of physics and engineering to the diagnosis and treatment of human disease. This course consists of weekly lectures covering broad topics in medical physics including diagnostic imaging, radiation oncology, radiation safety, and nuclear medicine. Lectures will be given by invited speakers drawn from many university and medical center departments including Biomedical Engineering, radiology, physics, radiation safety, and radiation oncology. Prerequisites: background in engineering or physics.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

MEDPHY752K - Seminars in Medical Physics

Course Description
Medical physics is the application of the concepts and methods of physics and engineering to the diagnosis and treatment of human disease. This course consists of weekly lectures covering broad topics in medical physics including diagnostic imaging, radiation oncology, radiation safety, and nuclear medicine. Lectures will be given by invited speakers drawn from many university and medical center departments including Biomedical Engineering, radiology, physics, radiation safety, and radiation oncology. Taught at Duke Kunshan University. Prerequisite: Background in engineering or physics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

MEDPHY758 - Medical Physics Practicum and Shadowing

Course Description
The course gives hands on experience in practical aspects of medical physics. Special emphasis is given to the operation of various therapy units and dose measuring devices, techniques of measuring the characteristics of radiation beams, commissioning and quality assurance checks for radiation producing devices in the clinic. Diagnostic Imaging, and Nuclear Medicine, and Health Physics equipment and procedures may be included. The course includes shadowing a clinician, technologist, or physicist, while performing their routine clinical tasks. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

MEDPHY758K - Medical Physics Practicum and Shadowing

Course Description
The course gives hands on experience in practical aspects of medical physics. Special emphasis is given to the operation of various therapy units and dose measuring devices, techniques of measuring the characteristics of radiation beams, commissioning and quality assurance checks for radiation producing devices in the clinic. Diagnostic Imaging, and Nuclear Medicine, and Health Physics equipment and procedures may be included. The course includes shadowing a clinician, technologist, or physicist, while performing their routine clinical tasks. Consent of instructor required. Taught at Duke Kunshan University.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

MEDPHY761 - Fundamentals of Biostatistics

Course Description
The first part will introduce the basic principles of descriptive statistics, probability theory, estimation theory, correlation and regression, with applications in the biomedical field. This is a 4 week session. The second part covers inferential biostatistics. It will introduce statistical hypothesis testing and its application to group comparisons of biomedical data. This part will cover parametric and non-parametric statistical tests and the basics of ANOVA analysis. This is a 4-week session. The third part covers medical decision analysis. This section includes the study and application of decision analysis methods popular in medical decision making. This part will cover performance evaluation measures of medical diagnostic tests, strategies for combining diagnostic tests, receiver operating characteristics analysis and its variants, and cost-effectiveness analysis. This is a 5-week session. 1 course credit each session. Repeatable for 3 total credits.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
3

MEDPHY762 - Data Science

Course Description
This course provides an introduction to methods underlying many biomedical informatics applications including information retrieval, probability, and statistical inference, medical decision making, machine learning concepts, and algorithms with a focus on biomedical decision making and discovery. Emphasis will be placed on learning the language of biomedical informatics and the art of statistical investigation as applied in the clinical field. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MEDPHY763 - Advanced Radiation Biology in Medical Physics

Course Description
This course will teach students about cutting-edge topics in the field of radiobiology that have relevance to medical physicists. The teaching will be through the format of a Journal Club. Class and group participation is required. Students will select a topic from either the reviewed manuscripts or an approved subject of their own choosing.The student will write a detailed report on this subject. Grading will be based upon quality of manuscript review presentations and the detailed final written report. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

MEDPHY763K - Advanced Radiation Biology in Medical Physics

Course Description
This course will teach students about cutting-edge topics in the field of radiobiology that have relevance to medical physicists. The teaching will be through the format of a Journal Club. Class and group participation is required. Students will select a topic from either the reviewed manuscripts or an approved subject of their own choosing. The student will write a detailed report on this subject. Grading will be based upon quality of manuscript review presentations and the detailed final written report. Instructor consent required. Taught in Durham.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

MEDPHY765 - Advanced Mathematical Methods for Medical Physicist

Course Description
This course will provide an introduction to boundary value problems and analytical partial differential equation techniques for wave-guide geometries found in medical applications (e.g., linear accelerators). ANSYS EM simulations will be performed to generate more accurate representation of linear accelerator waveguides and how (un)charged particles behave within the conductors. Hardware demonstrations will be provided time and resources permitting. Additionally, an introduction to complex variables and their application regarding the linac X-ray target and how they are related to different observed scattering phenomena (e.g., Compton scattering).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MEDPHY770K - Frontiers of Biomedical Science

Course Description
A course covering frontier topics of biomedical science that are currently not within the domain of medical physics, but that medical physicists, nonetheless, need to have knowledge of. Topics include genomics, bioinformatics, proteomics, and others. Offered at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
3

MEDPHY781 - Clinical Shadowing for Medical Physicists

Course Description
This course provides an opportunity to shadow clinical medical physicists in a wide range of clinical tasks that include quality assurance of imaging and radiotherapy machines, treatment planning, radiation measurement, patient treatment, etc. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

MEDPHY782 - Advanced Practicum for Clinical Development in Medical Physics

Course Description
This course provides an opportunity to participate in the creation of clinical learning experiences geared to individual students' needs, interests, aptitudes and desired outcomes. The student will work closely with a faculty instructor to develop a personalized project on a clinical topic.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

MEDPHY783 - Advanced Practicum for Academic Development in Medical Physics

Course Description
This course provides an opportunity to participate in the creation of academic learning experiences geared to individual students' needs, interests, aptitudes and desired outcomes. The student will work closely with a faculty advisor to develop a personalized project on an academic topic. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

MEDPHY784 - Advanced Practicum for Professional Development in Medical Physics

Course Description
This course provides an opportunity to participate in the creation of professional experiences geared to individual students' needs, interests, aptitudes and desired outcomes. The student will work closely with a faculty instructor to develop a personalized project on a professional development topic. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
3

MEDPHY790K - Independent Study in Medical Physics

Course Description
Enables students to study medical physics topics of interest via an independent study format. Specific topic, learning objectives and study materials are developed by the student and the instructor. Offered at Duke Kunshan University.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MEDPHY791 - Independent Study in Medical Physics

Course Description
An independent research project with faculty advisor. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
12

MEDPHY791K - Independent Study in Medical Physics

Course Description
An independent research project with faculty advisor. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

MEDPHY909 - Internship

Course Description
Student gains practical experience by taking an internship in industry/government and writes a report about this experience. Requires prior consent from the student's advisor and from the Director of Graduate Studies. May be repeated with consent of the advisor and the Director of Graduate Studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

MEDPHY751-1 - Medical Physics Basic Research Topics

Course Description

This seminar provides an overview of research projects conducted by medical physics faculty through a series of invited talks. The aim of the seminar is to help first year students identify their research interests and career/training orientation. Instructor consent is required.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

1

MEDPHY751-2 - Academic Development Skills for Medical Physicists

Course Description

This seminar prepares students for academic and research work through a series of presentations on academic skills that include literature reading, scientific writing and presentation, maintaining scientific records, etc. Instructor consent is required.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

MEDPHY751-3 - Professional Development Skills for Medical Physicists

Course Description

This seminar provides important skills for students' professional development through a series of presentations on relevant topics that include public speaking, effective scientific and professional communication, interviewing skills, entrepreneurship, etc. Designed for second year Medical Physics students. Instructor consent is required.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

MEDPHY751-3K - Professional Development Skills for Medical Physicists

Course Description

This seminar provides important skills for students' professional development through a series of presentations on relevant topics that include public speaking, effective scientific and professional communication, interviewing skills, entrepreneurship, etc. Designed for second year Medical Physics students. Taught at Duke Kunshan University.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

MEDPHY751-4 - Frontiers of Biomedical Science

Course Description
This seminar series covers various frontier topics that are relevant to the field and practice of Medical Physics but are otherwise outside the scope of the curriculum. It is focused on first year Medical Physics students so that they may pursue areas of interest in their subsequent year(s).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MEDPHY790-1 - Mathematical Methods Topics for Medical Physicists I

Course Description
This course will provide an introduction to boundary value problems and analytical partial differential equation techniques for wave-guide geometries found in medical applications (e.g., linear accelerators). ANSYS EM simulations will be performed to generate more accurate representation of linear accelerator waveguides and how (un)charged particles behave within the conductors. Hardware demonstrations will be provided time and resources permitting.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
2

Max Units:
2

MEDPHY790-2 - Mathematical Methods Topics for Medical Physicists II

Course Description
This course will provide an introduction to complex variables and their application in scattering theory. Specifically, we will cover differential cross sections and how they are related to different observed scattering phenomena (e.g., Compton scattering).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

MEDPHY791-1 - Focused-Topic Study in Medical Physics

Course Description
Independent study course.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
3

MEDREN506S - Renaissance Art: A Critical Assessment

Course Description
Mona Lisa. Teenage Mutant Ninja Turtles. Beyoncé. Renaissance art is popular in contemporary culture, and it has inspired artists and their publics around the globe since at least the 1960s. However, in academic circles, scholarship about Renaissance art is often seen as old fashioned and indifferent to contemporary debates centered on social and racial justice, gender and sexuality, or the environment. This seminar counters this view by bringing students together to discuss the most recent scholarship on Renaissance art that engages with global geographies, race, class, gender, disability, ecology, and the neurosciences. A basic knowledge of Renaissance art is welcome but not necessary.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST506S RENAISSANCE ART

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

MEDREN507S - Live Images: Ancient and Medieval Representations of the Divine

Course Description
The study of ancient and medieval works—speaking statues, miraculous icons, moving paintings. Seminar addresses questions of artistic and pictorial agency. Readings include theoretical texts, primary sources, and historical studies.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST558S LIVE IMAGES, VMS533S LIVE IMAGES, RELIGION552S LIVE IMAGES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

MEDREN524 - Music in the Baroque Era

Course Description
Selected topics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MUSIC553 MUSIC BAROQUE ERA

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MEDREN550 - Early to Late Medieval Christianity

Course Description
A survey of the history of Christianity from its beginnings through the fifteenth century. Also offered as a Divinity School course. Open to juniors and seniors only.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CZ) Civilizations

MEDREN551 - Early Modern, Modern and American Christianity

Course Description
A survey of the history of Christianity from the Reformation to the present, with emphasis on the early modern era. Also offered as a Divinity School course. Open to juniors and seniors only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CZ - (CZ) Civilizations

MEDREN554S - Columbus: A Global History

Course Description
This seminar returns to the global framework of Columbus's encounters with what would come to be called the New World. Students will study medieval conceptions of the world in maps, cosmographies, and travel literature as well as developments in China and the Americas before 1492. Our central focus will be texts by Columbus and his contemporaries: Peter Martyr d'Anghiera, Amerigo Vespucci, Martin Waldseemüller, Bartolomé de las Casas, Peri Reis, Mehmed el-Su'udi, and Jacopo ha-Kohen. Attention will be given to slavery, colonization, evangelization, prophecy, apocalypticism, and resistance. We will also explore the economic and intellectual consequences of Columbus's voyages across time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY526S COLUMBUS: A GLOBAL HISTORY, ROMST526S COLUMBUS: A GLOBAL HISTORY, RELIGION524S COLUMBUS: A GLOBAL HISTORY, CULANTH527S COLUMBUS: A GLOBAL HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations

MEDREN576S - Microhistory

Course Description
Examines methods of micro-historical analysis, focusing on distinctive practices that define this popular form of history writing, including how to reduce the scale of analysis; interpreting clues as a 'scientific paradigm'; treating culture as action; using historical contexts and theories; identifying historical actors; and crafting historical narratives. For advanced undergraduates, graduate students from any field interested in micro-analysis, historical theory and method and story-telling. Requirements include short essays and major research paper based on primary sources from any field or period of history.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY520S MICROHISTORY

MEDREN590 - Advanced Topics in Medieval and Renaissance Studies

Course Description
Topics may focus on fine arts, history, language and literature, or philosophy and religion. Open to seniors and graduate students; other students may need consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MEDREN590S - Advanced Seminar in Medieval and Renaissance Studies

Course Description
Topics may focus on fine arts, history, language and literature, or philosophy and religion. These seminar courses frequently engage interdisciplinary perspectives, historiography, and interpretation of medieval and Renaissance cultures. Open to seniors and graduate students; other students may need consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

MEDREN600S - Ghostly Statistics: Revenge Tragedies and Natural Language Processing

Course Description
An introduction to the study of Renaissance revenge tragedies using traditional literary methodologies alongside computational tools. The course readings include foundational classical texts that define the genre of tragedy, some of the most important authors of revenge tragedies—from Marlowe to Webster—and modern philosophical accounts of revenge and justice. The computational approach covers the mathematical concepts of linear algebra and statistics used in Natural Language processing, with applications in Python, with a goal of developing a working intuition of how language models work. No mathematical prerequisites and no prior familiarity with Renaissance literature necessary.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ISS520S GHOSTLY STATISTICS, CMAC520S GHOSTLY STATISTICS

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, QS - (QS) Quantitative Studies

MEDREN603 - Dante's Divine Comedy: Hell, Purgatory, and Paradise

Course Description
A voyage through the three otherworldly places of Dante's philosophical poem (Hell, Purgatory, Paradise) whose transformation of human actions into an ordered ethical system continues to captivate readers. Same as Italian 281/History 253/Medieval and Renaissance Studies 341/Literature 245/Religion 262 but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN582 DANTE'S DIVINE COMEDY, LIT582 DANTE'S DIVINE COMEDY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

MEDREN608S - Medieval and Renaissance Latin

Course Description
Detailed study of selections from one or more authors or genres. Selections either constitute a survey of Latin literature from late antiquity through the Renaissance, or focus on specific locations or periods (e.g. Insular Writers, or the Carolingian 'Renaissance', or the Long Twelfth Century). Authors and readings might include Augustine, Isidore of Seville, Bede, Einhard, Carolingian poetry, Hrotsvita, the Carmina Burana, Heloise and Abelard, Hildegard of Bingen, Petrarch, Lorenzo Valla, Leonardo Bruni. Topics may vary.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LATIN508S MEDIEVAL & RENAISSANCE LATIN

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

MEDREN618S - Boccaccio Studies

Course Description
Examines a particular aspect of Boccaccio's works, such as the Decameron. Issues may include Boccaccio's role in the construction of a vernacular literary community, his place in the history of literary criticism, his investigations of gender, or his relationship to the larger storytelling traditions. Taught in English with an Italian preceptorial available for majors or minors.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN584S BOCCACCIO STUDIES, LIT584S BOCCACCIO STUDIES

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance

MEDREN620S - Don Quixote in the Real World: From Escapism to Engagement

Course Description
This seminar shifts the study of the novel as a literary artifact to illuminate the synergy among the fields in the humanities, political economy, and law unique to the early modern period. Diverse readings introduce how the novel encompasses centuries of humanistic thought establishing modern parameters of moral philosophy, law, history, and economic thought. Cervantes' concern with social justice, freedom, empathy, and legal protection reflect on current moral questions about migration, difference, power, and wealth. Recent films and performances based on the novel re-assess Quixotism as engagement and activism.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH520S DON QUIXOTE IN THE REAL WORLD, ETHICS520S DON QUIXOTE IN THE REAL WORLD, LIT538S DON QUIXOTE IN THE REAL WORLD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MEDREN632S - Special Topics in Renaissance Prose and Poetry: 1500 to 1660

Course Description
Selected topics. Satisfies the Area I requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH538S RENAISS PROSE/POETRY TOP

MEDREN637S - Shakespeare & Co.: English Renaissance Drama

Course Description
Interrogates drama of Marlowe, Shakespeare, Jonson, and Middleton, and other playwrights from only the second time in world history when the genre conducts a culture's dominant intellectual currents. Umbrella questions: ethnicity, proto-feminism, sexual orientation, secularism, aesthetic-commercial rivalry, mercuriality, Shakespearean exceptionalism. In addition to edited play-texts we will also use major new electronic resources. Grade based equally on class discussion and a twenty-page essay.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
4

Crosslisted Courses
ENGLISH537S SHAKESPEARE & CO.

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (CZ) Civilizations

MEDREN642S - Premodern Times: A User's Manual

Course Description
How has thinking with premodern cultures shaped criticism? Seminar explores aspects of medieval Euro-Mediterranean cultures as perennial objects of thought, investigating the ways the surviving writing and images mark key theoretical models. Inquiry proceeds by pairs of works. We debate a mode of thinking by examining critical essays with premodern works. Writers include Christine de Pizan, Alain Chartier, troubadour poets; critics such as Agamben, Boucheron, Memmi, Schlanger. Modes such as gender & sexuality; visual culture; political thought; multilingual poetics and practice. Works in translation; readings in original language and preceptorial meetings for majors/graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH530S PREMODERN TIMES, LIT541S PREMODERN TIMES, ROMST531S PREMODERN TIMES, ARTHIST532S PREMODERN TIMES, HISTORY508S PREMODERN TIMES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

MEDREN645S - Epic and Exile: Classical Themes, Renaissance Variations

Course Description
Examines Renaissance epic poetry in relationship to themes of exile, empire, and collective identity. Studies the generic traditions of epic and romance, practices and modes of classical imitation, and transformation of epic through early modernity. Navigates the sociopolitical histories that have shaped epic poetry over time, particularly concerning political and religious conflicts, geographical and global contact, scientific innovations, and debates about women and gender. Primary readings include Virgil's 'Aeneid,' Lucan's 'De bello civile,' Dante's 'Purgatorio,' Tasso's 'Gerusalemme Liberata,' Camões's 'Os Lusíadas,' and Spenser's 'Faerie Queene.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN545S EPIC AND EXILE, ROMST545S EPIC AND EXILE, LIT585S EPIC AND EXILE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

MEDREN647S - Latin Palaeography

Course Description
Introduction to the field of Latin Palaeography, its history and methods; also the role of the book in the intellectual life of the medieval and Renaissance periods. Particular emphasis placed on learning to read Latin scripts from antiquity to the Renaissance.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LATIN584S LATIN PALAEOGRAPHY

General Education Curriculum Codes
FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

MEDREN665S - Islamic Philosophy & Mysticism (Sufi's Approach to Philosophy)

Course Description
The course explores the critical analysis of the creative products of the human intellect in mystical experiences including the symbolic stories of Avicenna, al-Gazali, Ibn Tufail, Suhrawardi & Mulla Sadra. It covers the key points of the theoretical and practical mysticism such as nature of the man, asceticism, unity and final abode, Sufi's style of life, four spiritual journeys, light and varieties, angelology, the archetypal world, vision and intellect, knowledge & presence, the hierarchy of knowing, the semantics of the modulation of being, reality & the circle of being, diversity in unity and unity in diversity, the unity of the knower and the known, unity of existence, and salvation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION665S ISLAMIC PHILOSOPHY & MYSTICISM

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, CZ - (CZ) Civilizations

MEDREN890S - Topics in Medieval and Renaissance Studies

Course Description
Seminar on the material bases (archival documents, legal records, court records, manuscripts, material artifacts, and the like) for the study of the Middle Ages. Topics addressed include origins and accessibility, as well as questions of method and historiography. Topics vary. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MEDREN590S-3 - Special Topics Seminar I

Course Description
Subjects, areas or themes that cut across historical eras, several national literatures, or genres, medieval and early modern period. See synopsis for more details. Satisfies Area I requirement for English majors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH590S-1 SP TOP SEMINAR I

MEDREN690S-2 - Topics in Renaissance Studies

Course Description
Focus on a particular aspect of the Italian or European Renaissance. Taught in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN590S-1 RENAISSANCE STUDIES (TOP)

MFAEDA702 - Genealogies of the Experimental

Course Description
This course will trace the history of experimental expression in 20th and 21st century art. The course will cover a series of different movements including Dada, Surrealism, Futurism, Cubism, Constructivism, The Bauhaus, Vorticism, Installation Art, Performance Art, Fluxus, Happenings, Actionism, Art Povera, The Situationists, Experimental Film, Video Art, Media Art, Net Art, Land Art, Body Art, Intervention Art, Art/Science and Technology, Bio Art, and Conceptual Art.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MFAEDA703 - Continuity and Change in Experimental and Documentary Arts

Course Description
Explores the historical and conceptual construction of experimental and documentary arts with specific attention to experimental and artistic practices that have expanded influenced and expanded traditions of artistic expression. An introduction to a range of documentary expression from photography to writing, from film to installations, all based on documentary fieldwork alongside readings by experimental makers as well as related secondary and tertiary literature from diverse disciplines. Final paper/project required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA711 - Documentary Fieldwork

Course Description
Semester-long individual documentary project using one or more documentary mediums, including photography, film/video, audio, and long form writing, or a blend of the above, with Durham and the Piedmont of North Carolina as our suggested focus. Experimentation with collaborative approaches to documentary fieldwork as well as individually driven work in documentary art. Requires final documentary project expressing cultural and political realities through a personal point of view.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA712 - Experiments in the Moving Image

Course Description
Poetic and experimental image-making, utilizing techniques that trace a historical trajectory from celluloid to digital. Exploration of cinematographic principles and cameraless experiments. Readings and screenings focusing on avant-garde film and digital traditions supplement student productions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA713 - Computational Media Studio

Course Description
Introduction to computer programming and interactive media production as artistic practice. In-depth exploration of critical possibilities opened by computational media through exercises, projects, and critiques. Experience with programming basics includes procedural and object-oriented programming, two- and three-dimensional graphics, data visualization, and innovative methods for interactivity. Team-taught. No previous programming experience required. Department consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA720 - MFAEDA Workshop and Critique I

Course Description
A class that meets weekly for 3 hours to review, discuss and reflect on student work in-depth. Works critiqued will be both works-in-progress as well as finished projects. Guest scholars and visiting artists will join the class at times, bringing an 'outside' perspective to discussions. Students will also be assigned formal roles to lead weekly critiques.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

MFAEDA721 - MFAEDA Workshop and Critique II

Course Description
A class that meets weekly for 3 hours to review, discuss and reflect on student work in-depth. Works critiqued will be both works-in-progress as well as finished projects. Guest scholars and visiting artists will join the class at times, bringing an 'outside' perspective to discussions. Students will also be assigned formal roles to lead weekly critiques.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

MFAEDA722 - MFAEDA Workshop and Critique III

Course Description
A class that meets weekly for 3 hours to review, discuss and reflect on student work in-depth. Works critiqued will be both works-in-progress as well as finished projects. Guest scholars and visiting artists will join the class at times, bringing an 'outside' perspective to discussions. Students will also be assigned formal roles to lead weekly critiques.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

MFAEDA723 - MFAEDA Workshop and Critique IV

Course Description
A class that meets weekly for 3 hours to review, discuss and reflect on student work in-depth. Works critiqued will be both works-in-progress as well as finished projects. Guest scholars and visiting artists will join the class at times, bringing an 'outside' perspective to discussions. Students will also be assigned formal roles to lead weekly critiques.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA791 - Thesis Writing Workshop

Course Description
Support for the writing of the thesis paper through multiple drafts and group discussion. Writing of a concise critique of the MFAEDA project following its completion and exhibition.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA792 - Thesis Project Workshop

Course Description
Completion and review of final thesis project.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MFAEDA793S - MFA Proseminar: Professional Practices

Course Description
This seminar is designed for graduate arts students pursuing advanced training at Duke in dance or experimental documentary arts. Students will engage with historical and contemporary issues surrounding arts labor and infrastructure, explore organizational strategies used by guest artists to sustain working livelihoods, and draft and revise professional portfolio materials enabling them to enter communities of practice beyond graduate school. Taught in rotation by core faculty from Duke's two MFA programs, this proseminar encourages artists to reflect on what they need to sustain an enabling environment for their work.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE793S MFA PROSEMINAR

MGM520 - Advanced Topics in Leveraging Fc-mediated Antibody Functions

Course Description
Topics covered will include how the genetic and functional properties of the antibody Fc regions and their counterpart Fc-receptors can impact and be exploited to treat and prevent infections or cancer. The course will also cover design strategies to improve the Fc-mediated functions of monoclonal antibodies used for passive protection and treatment, as well as for vaccines to induce Fc-mediated antibody functions in active immunization strategies. The course is targeted for post-prelim students interested in state-of-the-art studies in immune responses to pathogens and malignancy.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

General Education Curriculum Codes
(NS) Natural Sciences

MGM522 - Critical Readings in Genetics and Genomics

Course Description
Classical and molecular genetic approaches to understanding eukaryotic cell function using unicellular organisms such as yeasts. Experimental approaches as well as illustrative studies of secretion, cell cycle, signal transduction, and cytoskeleton. Discussion of current literature and student presentations.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
UPGEN522 CRITICAL READINGS IN GENETICS

MGM552 - Virology

Course Description
Molecular biology of mammalian viruses, with emphasis on mechanisms of replication, virus-host interactions, viral pathogenicity, and the relationship of virus infection to neoplasia.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
IMMUNOL552 VIROLOGY

MGM582 - Microbial Pathogenesis

Course Description
Modern molecular genetic approaches to understanding the pathogenic bacteria and fungi. Underlying mechanisms of pathogenesis and host-parasite relationships that contribute to the infectious disease process.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

MGM593 - Research Independent Study

Course Description
Independent research in Molecular Genetics and Microbiology.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MGM701 - Foundations of Molecular Genetics and Microbiology

Course Description
Foundations of MGM will provide first year MGM PhD students with exposure to the research interests in the department. MGM faculty will provide an overview of their research along with important historical context.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

MGM702 - Papers and Grant Writing Workshop

Course Description
Introduction to grant and fellowship writing; writing assignment of two proposal topics; evaluation and critique of proposal by fellow students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
UPGEN702 SCIENTIFIC WRITING

MGM732 - Human Genetics

Course Description
Topics include genetic mechanisms of disease (rare and common genetic risk variants, multi-factorial inheritance, epigenetics, cytogenetics), as well as disease-specific examples including neurogenetics, cancer genetics, pharmacogenetics, complex diseases and gene therapy. Lectures plus weekly discussion of assigned papers from the research literature. Prerequisite: University Program in Genetics 778 (or any individual University Program in Genetics 778A-F module) or completion of the first-year Medical Scientist Training Program (MTSP) curriculum, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
UPGEN732 HUMAN GENETICS

MGM790S - Topics in Molecular Genetics and Microbiology

Course Description
Required course for all graduate students receiving their degree through MGM.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

MGM793 - Research for Graduate Students

Course Description
Laboratory investigation for Graduate students. Various labs within the department of molecular genetics and microbiology. Credits to be arranged. Instructor consent is required.

Grading Basis
Graded

Units

Min Units:
2

Max Units:
2

MOLCAN533 - Essentials of Pharmacology and Toxicology

Course Description
Drug absorption, distribution, excretion, and metabolism. Structure and activity relationships; drug and hormone receptors and target cell responses. Instructor consent required. Prerequisite: introductory biology; Chemistry 201DL; Mathematics 21 and 122.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
PHARM533 ESSENTIALS PHARM/TOXICOL, NEUROSCI533 ESSENTIALS PHARM/TOXICOL

MOLCAN551L - Biomedical Optical Spectroscopy and Tissue Optics (GE, IM)

Course Description
This course is designed to provide students with a working knowledge of the theoretical and experimental principles underlying the application of optical spectroscopy and tissue optics in biological and biomedical engineering. Topics covered in this course include: Absorption Spectroscopy; Scattering Spectroscopy; Fluorescence Spectroscopy; Tissue Optics; Monte Carlo Modeling; Diffusion Modeling; Spectroscopic System Design and Signal to Noise Analysis; and Molecular Imaging. This course also includes labs for each topic that is covered, journal article review on emerging technologies and a term project. Prerequisite: Physics 152L.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BME551L BME OPT SPECT TISSUE OPTICS

MOLCAN710 - Papers and Grant Writing Workshop

Course Description
Introduction to grant and fellowship writing; writing assignment of two proposal topics; evaluation and critique of proposal by fellow students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CELLBIO710 SCIENTIFIC WRITING, NEUROBIO710 SCIENTIFIC WRITING, PHARM710 SCIENTIFIC WRITING

MOLCAN730 - Stem Cell Course

Course Description
The course is designed for first-year graduate students to learn the fundamentals of stem cell biology and to gain familiarity with current research in the field. The course will be presented in a lecture and discussion format based on the primary literature. Topics include: stem cell concepts, methodologies for stem cell research, embryonic stem cells, adult stem cells, cloning and stem cell reprogramming and clinical applications of stem cell research. Prerequisites: undergraduate level cell biology, molecular biology, and genetics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CELLBIO730 STEM CELL COURSE, PHARM730 STEM CELL COURSE, DSCB720 STEM CELL COURSE

MOLCAN733 - Experimental Design and Biostatistics for Basic Biomedical Scientists

Course Description
The use and importance of statistical methods in laboratory science, with an emphasis on the nuts and bolts of experimental design, hypothesis testing, and statistical inference. Central tendency and dispersion, Gaussian and non-Gaussian distributions, parametric and nonparametric tests, uni- and multivariate designs, ANOVA and regression procedures. Ethical issues in data handling and presentation. Student presentations in addition to formal lectures. Intended for third-year graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BME733 EXPERIMENT DESIGN & STATISTICS, PHARM733 EXPERIMENT DESIGN & STATISTICS, NEUROBIO733 EXPERIMENT DESIGN & STATISTICS, CMB733 EXPERIMENT DESIGN & STATISTICS

MOLCAN761 - Cellular Signaling Module I: GPCR Signaling and Disease

Course Description
This module will cover the basic mechanism of signal transduction through G protein coupled receptors (GPCR) and how they control a wide array of biological functions from vision to reproduction and are the largest targets of therapeutic interventions. How new concepts in our understanding of their signal transduction mechanisms is leading to the development of new and improve therapies for various disorder.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOCHEM761 CELLULAR SIGNALING MODULE I, CELLBIO761 CELLULAR SIGNALING MODULE I, PHARM761 CELLULAR SIGNALING MODULE I

MOLCAN762 - Cellular Signaling Module II: Intracellular Signaling and Disease

Course Description

This module will cover how ion channels and intracellular nuclear receptors control cellular functions mediated through transcription or calcium signaling to regulate physiological processes in health and disease.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

Crosslisted Courses

BIOCHEM762 CELLULAR SIGNALING MODULE II, CELLBIO762 CELLULAR SIGNALING MODULE II, PHARM762 CELLULAR SIGNALING MODULE II

MOLCAN763 - Cellular Signaling Module III: Growth Factor Pathway in Development and Disease

Course Description

The focus of this module is on signaling pathways induced by extracellular factors that regulate growth, survival, and development, and their deregulation in disease including cancer. Among the pathways covered are those regulated by ligand-activated Receptor Tyrosine Kinases, Wnt/beta-catenin signaling, Notch signaling, and Hedgehog signaling.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

Crosslisted Courses

BIOCHEM763 CELLULAR SIGNALING MODULE III, CELLBIO763 CELLULAR SIGNALING MODULE III, PHARM763 CELLULAR SIGNALING MODULE III

MOLCAN780 - Graduate Student Seminar

Course Description

A presentation and discussion course in which program faculty and graduate students review recent progress in contemporary areas of Pharmacology and Cancer Biology. Provides an important avenue for evaluation and feedback for graduate student research and communication skills and is required for all students pursuing their PhD degree in Pharmacology and Molecular Cancer Biology.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

2

Max Units:

2

Crosslisted Courses

PHARM780 STUDENT SEMINAR

MOLCAN793 - Research in Pharmacology and Molecular Cancer Biology

Course Description

Laboratory investigation in various areas of pharmacology. Credit to be arranged.

Grading Basis

Graded

Units

Min Units:
1

Max Units:
10

Crosslisted Courses
PHARM793 RESEARCH PHARM/MCB

MOLCAN818 - Molecular Mechanisms of Oncogenesis

Course Description
This course is a lecture presentation and discussion course on the molecular mechanisms underlying cancer development in which students complete periodic tests, present a paper, and work in a group to write and defend a grant proposal. The objective of the course is to provide an opportunity for in-depth discussions of molecular mechanisms underlying the development of human cancers. The course is intended for second-year students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHARM818 MOLEC MECH ONCOGENESIS

MOLCAN819 - Cancer as a Disease

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
2

Max Units:
2

MSEG591 - Independent Study

Course Description
Independent study guided by an instructor with related interests and expertise. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MSEG891 - Internship

Course Description
Student gains practical experience by taking a job in industry, and writing a report about this experience. Requires prior consent from the director of graduate studies. May be repeated with consent of the director of graduate studies. A full-time internship is available to students if it allows them to gain practical experience in a work environment related to their academic training and enhances their overall academic experience and, for F-1 Visa, their employment prospects once they return to their home country. Internship can be local or within United States.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

MUSIC501 - Introduction to Musicology

Course Description
Methods of research on music and its history, including studies of musical and literary sources, iconography, performance practice, ethnomusicology, and historical analysis, with special attention to the interrelationships of these approaches.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC553 - Music in the Baroque Era

Course Description
Selected topics.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN524 MUSIC BAROQUE ERA

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC554 - Music in the Classic Era

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC555 - Music in the Nineteenth Century

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC556 - Music in the Twentieth Century

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC560 - Tonal Analysis

Course Description
In-depth study of various methods for analyzing tonal music. Approach and content vary by instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC561S - Analysis of Early Music

Course Description
Selected areas of 'pre-tonal' music and various analytical methodologies that have been developed to understand them. Content changes, from semester to semester and with different instructors. Possible areas covered include plainchant, trouvère monophony, Machaut, Fifteenth-century polyphony, modal music of the Renaissance, early seventeenth-century repertories.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC562 - Analysis of Music After 1900

Course Description
Introduction to analytic and theoretic methodologies for engaging the structures and rhetoric of a range of art-music styles since 1900. Readings in atonal and twelve-tone theories; hexatonic and octatonic pitch collections; neo-Riemannian transformations; voice leading, metric and rhythmic theories. Theory-based analysis of selected repertory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

MUSIC575S - Generative Media Authorship - Music, Text & Image

Course Description
Covers Generative Media in all its forms. Lectures, workshops, discussions, one semester-length project, shorter individual exercises and readings. Interdisciplinary Graduate Seminar with advanced undergraduates and MFA students with permission of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS575S GENERATIVE MEDIA AUTHORSHIP, VMS575S GENERATIVE MEDIA AUTHORSHIP, ISS575S GENERATIVE MEDIA AUTHORSHIP, CMAC575S GENERATIVE MEDIA AUTHORSHIP

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

MUSIC590 - Selected Topics in Analysis

Course Description
An exploration of analytical approaches appropriate to a diversity of music, which may include settings of literary texts, pre-tonal music, and music in oral and vernacular traditions. Prerequisite: Music 560 or consent of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC590S - Special Topics in Music

Course Description
Opportunities to engage with a specific issue in music.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MUSIC595 - Language, Music and Dementia: Neuroscience Approaches

Course Description
Exploration of the neuroscience data on cognitive processing of languages and music in healthy subjects and pathology. Specific attention given to the interaction of language(s) and music in the brain, music therapy and dementia, and multilingualism and dementia. Topics include the role of languages and music in building cognitive reserve, linguistic breakdown and cognitive decline in healthy aging and dementia, cross-cultural studies of pitch and timbre perception across languages of the world, possible benefits of multilingualism in healthy aging, interactions of singing and memory, integration of auditory and visual neural systems in language and music.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST595 LANGUAGE, MUSIC AND DEMENTIA, NEUROSCI595 LANGUAGE, MUSIC AND DEMENTIA

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

MUSIC691S - Black Sonic Culture—Analog to Digital

Course Description
The course will examine the production, reproduction and distribution Black (African Diasporic) 'Sound'--inclusive of, but not exclusive of various musical cultures--in the creation of Black Sonic Culture(s) that were in conversation with and counter to Black Literary Culture, Black Visual Culture and Black Performance traditions. The course, in particular, will examine the impact on the transition from analog sound to digital sound.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS622S BLACK SONIC, ENGLISH691S BLACK SONIC, LIT691S BLACK SONIC

General Education Curriculum Codes
IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

MUSIC697 - Composition

Course Description
Weekly independent study sessions at an advanced level with a member of the graduate faculty in composition, producing musical scores (or in some cases, audio documents) which accrue towards the production of a portfolio. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC698 - Composition

Course Description
Continuation of Music 697. Weekly independent study sessions at an advanced level with a member of the graduate faculty in composition, producing musical scores (or in some cases, audio documents) which accrue towards the production of a portfolio. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC699 - Composition

Course Description
Continuation of Music 698. Weekly independent study sessions at an advanced level with a member of the graduate faculty in composition, producing musical scores (or in some cases, audio documents) which accrue towards the production of a portfolio. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC771S - Graduate Seminar: Theories of Corporeality

Course Description
This graduate reading seminar explores theoretical frames for articulating the social, political, cultural, phenomenological and economic significance of the body. Course literature draws significantly although not exclusively from dance and performance research to consider a wide range of approaches to corporeality studies. Required reading, viewing of performance texts, and guest presentations, and workshops draw surgical attention to the body as a discursive site and to performance as a site of embodied power and potential resistance. Students contribute knowledge across a range of graduate writing genres. Course culminates in the creation of an original research project. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE771S THEORIES OF CORPOREALITY, GSF771S THEORIES OF CORPOREALITY

MUSIC791 - Independent Study

Course Description
With the consent of a graduate faculty member and the approval of the director of graduate studies, the student will undertake a specialized research project of his/her own choosing.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC792 - Independent Study in Performance Practice and Interpretation

Course Description
The exploration of significant interpretive and performance-practice issues as they affect a specific repertory. Weekly meetings with a member of the graduate faculty. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC797 - Composition

Course Description
Weekly independent studies at the doctoral level with a member of the graduate faculty in composition.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC798 - Composition

Course Description
Weekly independent studies at the doctoral level with a member of the graduate faculty in composition.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC799 - Composition

Course Description
Weekly independent studies at the doctoral level with a member of the graduate faculty in composition.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

MUSIC511-1 - Collegium Musicum

Course Description
An opportunity to study and perform vocal and instrumental music from the Middle Ages through the Baroque. Weekly rehearsals; one or two concerts per semester. Audition and consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum

MUSIC690S-1 - Composition Seminar: Selected Topics

Course Description
Selected topics in composition.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

MUSIC790S-1 - Seminar in the History of Music

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

MUSIC790S-2 - Studies in Ethnomusicology

Course Description
A theoretical and methodological exploration of ethnomusicological approaches to the study of music and related expressive forms. Topics vary.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

NANOSCI511 - Foundations of Nanoscale Science and Technology

Course Description
This course is the introductory course for the Graduate Certificate Program in Nanoscience (GPNANO) and is designed to introduce students to the interdisciplinary aspects of nanoscience by integrating important components of the broad research field together. This integrated approach will cross the traditional disciplines of biology, chemistry, electrical & computer engineering, computer science, and physics. Fundamental properties of materials at the nanoscale, synthesis of nanoparticles, characterization tools, and self-assembly. Prerequisites: Physics 152L and Chemistry 101DL or instructor approval.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE511 FOUNDATIONS NANOSCALE SCI/TECH, CHEM611 FOUNDATIONS NANOSCALE SCI/TECH

NCS513 - Dynamics of Complex Systems

Course Description
An introduction to the quantitative description and analysis of physical systems with complex dynamics and how the properties of such systems change as parameters are varied. Part of the course will discuss dynamical systems described by just a few variables and related concepts such as model equations, phase space, linear stability, bifurcations, universality, attractors, fractals, chaos, and time series analysis. Other topics will vary by instructor and might include spatiotemporal dynamics, dynamical networks, and the control of dynamical systems. Prerequisite: MATH 216, the PHYSICS 161/162 sequence, and COMPSCI 101, or their equivalents.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI524 DYNAMICS OF COMPLEX SYSTEMS, PHYSICS513 DYNAMICS OF COMPLEX SYSTEMS

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

NEUROBIO631 - Contemporary Topics in Membrane Biology

Course Description
This course will highlight modern topics regarding biological membranes and membrane proteins that are important for human physiology and disease. Topics include structure and dynamics of biological membranes, structure and function of membrane proteins that play critical roles in cell signaling, diseases related to dysfunction of membrane and membrane proteins, and current efforts on drug discovery. Major techniques used in membrane research will also be covered. The format will be a combination of lectures and discussion of primary literature. Students will be evaluated based on their class participation and performance at the final presentations. Reserved for graduate students; open to undergraduate students by instructor permission.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM631 MEMBRANE BIOLOGY, CMB631 MEMBRANE BIOLOGY, PHARM631 MEMBRANE BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

NEUROBIO686S - Principles of Neuroimmunology

Course Description
Bidirectional communication between the brain and immune system, in disease and during normal function/homeostasis. Historical foundations of the field in disorders such as multiple sclerosis and HIV; the anatomy of CNS-immune connections; blood-brain-barrier function and dysfunction; leukocyte trafficking, surveillance, and infiltration of the CNS; cellular players including peripheral vs. CNS-resident immune cells and antigen presentation; neuroinflammation and neurodegenerative disease; recent literature highlighting the critical role of immune molecules in neural development and lifelong plasticity. Instructor consent required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY686S PRINCIPLES OF NEUROIMMUNOLOGY, NEUROSCI686S PRINCIPLES OF NEUROIMMUNOLOGY, IMMUNOL686S PRINCIPLES OF NEUROIMMUNOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

NEUROBIO710 - Papers and Grant Writing Workshop

Course Description
Introduction to grant and fellowship writing; writing assignment of two proposal topics; evaluation and critique of proposal by fellow students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CELLBIO710 SCIENTIFIC WRITING, MOLCAN710 SCIENTIFIC WRITING, PHARM710 SCIENTIFIC WRITING

NEUROBIO719 - Concepts in Neuroscience I: Cellular and Molecular Neurobiology

Course Description
The goal of this course is to introduce graduate students to the basic principles underlying cellular and molecular neurobiology. The first part of the course will cover the cellular mechanisms of neurophysiology, that is the generation and propagation of neuronal electrical signals. The second part will cover molecular mechanisms of synaptic signaling, plasticity, axon guidance, and neural regeneration. An interactive discussion-based format focused on key discoveries in these areas of research, including analysis of original papers, will allow students to learn how the brain encodes, transmits, and stores information as well as form neural circuits. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
5

Max Units:
5

NEUROBIO719A - Neuronal Excitability

Course Description
The electric excitability of neurons is mediated by ion channels. First, we will give an overview of the human ion channel set and discuss the basic structure and functions of ion channels. We will show how the function of ion channels is measured and analyzed. We will analyze the 3D crystal structures of a few ion channels in greater detail. In the second week we will focus on the basic electrical properties of cell membranes, neuronal excitability, and action potentials.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

NEUROBIO719B - Cell Biology of the Neuron

Course Description
How the brain is wired during development is a fundamental question of neurobiology. In this module we will discuss the molecular mechanisms that sculpt brain patterning and axon guidance, we will discuss the regulation of neurogenesis, we will cover how the synapse is formed, and we will talk about how sensory information guides the development of the brain in early postnatal life. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

NEUROBIO719C - Synaptic Transmission

Course Description
This module will cover the fundamentals of basic cell biology as well as focusing on cellular specializations that are exaggerated in neurons. Topics include polarized protein trafficking, organelle motility, cytoskeleton organization, synaptic scaffolds, intracellular signaling cascades and cell-to-cell communication, including communication between neurons and non-neuronal cells. We will cover genetic methods for the study of molecular function in neurons and finally we will have a class project to discuss how neurotrophic factors promote cell survival and the molecular mechanisms of neuronal death. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

NEUROBIO719D - Neural Plasticity

Course Description
Plasticity is one of the most unique features of the brain, mediating the ability of this organ to learn from its environment. In this module we will explore molecular and cellular mechanisms of the stimulus-inducible changes in synaptic strength (long-term depression and long-term potentiation; LTP and LTD) that are key models for learning and memory. We will review the signal transduction pathways that convert neuronal activity into changes in synaptic structure and function and we will explore the contexts in which synaptic and circuit plasticity contributes to changes in brain function and behavior. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

NEUROBIO719E - Neural Development

Course Description
As the focal point of communication between neurons, the synapse is an essential adaptation of the nervous system that contains a wide variety of unique proteins and functional specializations. In this module, we will cover the structure and function of the synapse, from the dynamics of presynaptic vesicle release through the postsynaptic response to neurotransmitter, and the essential proteins and molecules that mediate these processes. Finally, we will discuss how these elements can be tailored to fit the needs of different circuits. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

NEUROBIO720 - Concepts in Neuroscience II: Principles of Organization of Neuronal Systems

Course Description
The principles of organization of neurons into functional circuits will be examined through a series of 4 distinct modules, listed below. All four modules required for first-year neurobiology students. Instructor consent required. Prerequisite: Neurobiology 719.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

NEUROBIO726S - Neurobiology Journal Club

Course Description
Once a month, first and second year neurobiology graduate students meet to hold a student-run journal club to discuss the work of an invited seminar speaker from an outside institution. On the following Tuesday, the students attend the seminar, then have lunch with the speaker.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

NEUROBIO730 - Statistics for Neuroscience

Course Description
Introduction to applied probability theory and statistical methods in commonly used neuroscience. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

NEUROBIO733 - Experimental Design and Biostatistics for Basic Biomedical Scientists

Course Description
The use and importance of statistical methods in laboratory science, with an emphasis on the nuts and bolts of experimental design, hypothesis testing, and statistical inference. Central tendency and dispersion, Gaussian and non-Gaussian distributions, parametric and nonparametric tests, uni- and multivariate designs, ANOVA and regression procedures. Ethical issues in data handling and presentation. Student presentations in addition to formal lectures. Intended for third-year graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BME733 EXPERIMENT DESIGN & STATISTICS, PHARM733 EXPERIMENT DESIGN & STATISTICS, CMB733 EXPERIMENT DESIGN & STATISTICS, MOLCAN733 EXPERIMENT DESIGN & STATISTICS

NEUROBIO735 - Quantitative Approaches in Neurobiology

Course Description
Through lectures and hands-on problem solving, this course will provide students with a working, practicable background in coding in matlab, the fundamentals of statistics, and theoretical and computational neuroscience. The material will be oriented strongly towards the needs of working neurobiologists, and will require considerable independent work. Consent of instructor is required.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

NEUROBIO751 - Neuroscience Bootcamp

Course Description
Neurobiology Bootcamp is a one week immersive lecture, discussion and laboratory course for graduate students in the Neurobiology Graduate Program and allied programs at the discretion of the instructors. The Duke Neuroscience Bootcamp is designed to (1) provide a common knowledge base of neuroscience fundamentals; (2) demystify the tools of the discipline - providing hands-on experience with techniques that are commonly used to explore cellular/molecular, circuits and computational neuroscience; and (3) introduce new students to a wide variety of Neurobiology Training Faculty and helpful resources for ensuring a successful graduate career.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
NEUROSCI751 NEUROSCIENCE BOOTCAMP

NEUROBIO759S - Principles in Cognitive Neuroscience I

Course Description
Introduction to the cognitive neuroscience of emotion, social cognition, executive function, development, and consciousness. Topics also include cognitive disorders, and computer modeling. Highlights current theories, methodological advances, and controversies. Students evaluate and synthesize findings across a variety of research techniques. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY759S PRINCIPLES IN COG NEURO I

NEUROBIO760S - Principles in Cognitive Neuroscience II

Course Description
Introduction to the cognitive neuroscience of emotion, social cognition, executive function, development, and consciousness. Topics also include cognitive disorders, and computer modeling. Highlights current theories, methodological advances, and controversies. Students evaluate and synthesize findings across a variety of research techniques. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY760S PRINCIPLES COGNITV NEUROSCI II, PHIL754S PRINCIPLES COGNITV NEUROSCI II

NEUROBIO762 - Neurobiology of Disease

Course Description
Meeting 3x week—month of January—discuss given disease of the nervous system. One or two students working with a designated faculty member are responsible for an introduction (20-25 minutes) followed by a discussion of key primary papers on the subject. Two or three articles provided at least a week in advance provide a framework for discussion. Diseases to be covered currently include: ALS, Alzheimer's, CNS neoplasms, Epilepsy, multiple sclerosis, Parkinson's disease, retinitis pigmentosa, and stroke. will discuss key features of the disease, etiology and pathogenetic mechanisms of the disease, models available and the evidence establishing the validity of the models & therapies.

Grading Basis
Credit / No Credit

Units

Min Units:
2

Max Units:
2

NEUROBIO790S - Student Seminar (Topics)

Course Description
Prepare and present research papers to students and faculty on topics of broad interest in Neurobiology. Lead discussions and give feedback about the presentations. Required of all first- and second-year Neurobiology students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

NEUROBIO791 - Neurobiology Internship

Course Description

Student gains practical experience by taking an internship in industry/government and writes a report about this experience. Requires prior consent from the student's advisor and from the Director of Graduate Studies. May be repeated with consent of the advisor and the Director of Graduate Studies.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

NEUROBIO793 - Research in Neurobiology

Course Description

Guided independent study and research experience in neurobiology. Nature of topic to be decided by individual arrangement with faculty advisor. Consent of faculty advisor required.

Grading Basis

Graded

Units

Min Units:

1

Max Units:

16

NEUROBIO881 - Functional Magnetic Resonance Imaging

Course Description

This course will cover the complete fMRI analysis pipeline, from the scanner to constructing brain maps. Students will be trained on basic principles of fMRI, artifact detection, preprocessing, and task-fMRI signal estimation. This course will also cover recent advancements in resting-state fMRI, connectivity/graph-theoretic/independent-component analyses, and machine learning. The course will consist of lectures, review of key research papers and integrated laboratory sessions. The laboratory sessions will include hands-on analysis of fMRI data sets. Students will gain experience both in the theoretical principles of fMRI analysis and in the practical aspects of implementing them.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PSY762 FUNC MAGNETC RESONANCE IMAGING

NEUROSCI500S - The Cinematic Depiction of Psychopathology

Course Description

Critically explore depictions of mental illness in modern cinema and television, and the extent to which they capture our emerging understanding of dysfunction in core neural circuits supporting normal behavior. Prerequisite: Psychology/Neuroscience 277.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
PSY500S THE CINEMA OF PSYCHOPATHOLOGY

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

NEUROSCI503 - Computational Neuroengineering (GE, EL)

Course Description
This course introduces students to the fundamentals of computational modeling of neurons and neuronal circuits and the decoding of information from populations of spike trains. Topics include: integrate and fire neurons, spike response models, homogeneous and inhomogeneous Poisson processes, neural circuits, Weiner (optimal) adaptive filters, neural networks for classification, population vector coding and decoding. Programming assignments and projects will be carried out using MATLAB. Prerequisites: Biomedical Engineering 301L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME503 COMPUTATIONAL NEUROENGINEERING

NEUROSCI504 - Fundamentals of Electrical Stimulation of the Nervous System (EL, GE)

Course Description
This course presents a quantitative approach to the fundamental principles, mechanisms, and techniques of electrical stimulation required for non-damaging and effective application of electrical stimulation. Consent of instructor required. Prerequisite: BME 301L or graduate standing. (EL, GE)

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME504 FUND ELEC STIM NERV SYS

NEUROSCI510 - Brain and Language

Course Description
The relationship of brain and language is explored through a variety of methodologies and approaches, including studies of first and second language acquisition across cultures, multilingualism, language disorders. Neuroimaging studies (including electrophysiological and hemodynamic techniques) are central to understanding current neurobiological, neurophysiological and neurolinguistic perspectives of representation of language(s) in the brain. Readings and case studies focus on the latest theoretical contributions to the field. IRB certification and data collection are required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST510 BRAIN AND LANGUAGE, PSY575 BRAIN AND LANGUAGE

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences

NEUROSCI513 - Introduction to Neurodynamics (EL, GE)

Course Description
Behavior of neurons and neuronal networks examined with methods of nonlinear dynamics. Interpretation in phase space of excitability, spiking, bursting, phase locking, synchronization, competition, and chaos. Applications to the development of novel neurostimulation methods and to understanding dynamic mechanisms behind sensing, learning, memory, and cognition. Readings from the original literature. Prerequisites BME 301L, graduate standing or consent of instructor. (EL, GE)

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME513 INTRO NEURODYNAMICS

NEUROSCI515 - Neural Prosthetic Systems (GE, EL, IM)

Course Description
Covers several systems that use electrical stimulation or recording of the nervous system to restore function following disease or injury. For each system, the underlying biophysical basis for the treatment, the technology underlying the treatment, and the associated clinical applications and challenges are examined. Systems to be covered include cochlear implants, spinal cord stimulation of pain, vagus nerve stimulation for epilepsy, deep brain stimulation for movement disorders, sacral root stimulation for bladder dysfunction, and neuromuscular electrical stimulation for restoration of movement. Prerequisite: BME 301L or ECE 110L.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME515 NEURAL PROSTHETIC SYSTEMS

NEUROSCI517 - Neuronal Control of Movement (GE, EL)

Course Description
Course for graduate and upper-level undergraduate students to provide them with an understanding of the neuronal circuits that move our bodies and with techniques for analysis, simulation, and modification of these circuits by neural engineers. Topics start in the periphery with muscles, the spine, and functional electrical stimulation; then proceed centrally to subcortical circuits, deep brain stimulation, and forward models; and conclude with cerebral cortical networks and population decoding. Students are expected to have background in bioelectricity and Matlab programming. Prerequisite: BME 301L or consent of the instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME517 NEURONAL CONTROL OF MOVEMENT

NEUROSCI518S - Natural Neurotoxins: Biology, Physiology and Toxicology

Course Description

Introduction of natural neurotoxins that target ion channels and receptors. Topics include the origin and nature of neurotoxins; physiological and molecular bases of toxin action and selectivity; neurotoxins as tools and resources for nociceptive pain research. Prerequisites: Biology 201.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

BIOLOGY518S NATURAL NEUROTOXINS

General Education Curriculum Codes

NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

NEUROSCI533 - Essentials of Pharmacology and Toxicology

Course Description

Drug absorption, distribution, excretion, and metabolism. Structure and activity relationships; drug and hormone receptors and target cell responses. Instructor consent required. Prerequisite: introductory biology; Chemistry 201DL; Mathematics 21 and 122.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

4

Max Units:

4

Crosslisted Courses

MOLCAN533 ESSENTIALS PHARM/TOXICOL, PHARM533 ESSENTIALS PHARM/TOXICOL

NEUROSCI555S - Topics in Philosophy of Mind

Course Description

One or more topics such as mental causation, animal minds, artificial intelligence, and foundations of cognitive science. Includes relevant literature from fields outside philosophy (for example, psychology, neuroscience, ethology, computer science, cognitive science).

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PHIL555S PHILOSOPHY OF MIND (TOP)

General Education Curriculum Codes

R - (R) Research, STS - (STS) Science, Technology, and Society, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

NEUROSCI567 - Theoretical Neuroscience

Course Description
Introductory course on theoretical neuroscience. Neuronal biophysics: ions, membranes, channels. Single neuron models: Hodgkin-Huxley, 2D reductions, phase plane analysis. Leaky integrate-and-fire model, response to stochastic inputs. Models of synapses and synaptic plasticity. Models of networks at various scales. Network dynamics: rate models, networks of spiking neurons. Coding and decoding by single neurons and populations of neurons. Unsupervised learning, supervised learning, reinforcement learning. Adequate for any graduate student in physics or other quantitative fields (mathematics, statistics, engineering, computer science) and undergraduate majors in such fields.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHYSICS567 THEORETICAL NEUROSCIENCE

General Education Curriculum Codes
(NS) Natural Sciences, (QS) Quantitative Studies

NEUROSCI590 - Special Topics in Neuroscience

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

NEUROSCI590S - Special Topics in Neuroscience

Course Description
Topics vary by semester. Undergraduate as well as Graduate/ Professional students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

NEUROSCI595 - Language, Music and Dementia: Neuroscience Approaches

Course Description
Exploration of the neuroscience data on cognitive processing of languages and music in healthy subjects and pathology. Specific attention given to the interaction of language(s) and music in the brain, music therapy and dementia, and multilingualism and dementia. Topics include the role of languages and music in building cognitive reserve, linguistic breakdown and cognitive decline in healthy aging and dementia, cross-cultural studies of pitch and timbre perception across languages of the world, possible benefits of multilingualism in healthy aging, interactions of singing and memory, integration of auditory and visual neural systems in language and music.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST595 LANGUAGE, MUSIC AND DEMENTIA, MUSIC595 LANGUAGE, MUSIC AND DEMENTIA

General Education Curriculum Codes
R - (R) Research, NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

NEUROSCI650S - History of Mental Illness

Course Description
What is madness? Historical analysis offers a variety of answers to this question. This course will provide students with a broad introduction to the modern history of mental illness, with particular emphasis on the nineteenth and twentieth centuries. We will cover a diverse set of issues, including the disciplinary formation of psychiatry and neurology, new medical understandings of pathology, and the political assumptions and ramifications of defining and redefining madness in the North Atlantic and abroad.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT650S HISTORY OF MENTAL ILLNESS, HISTORY650S HISTORY OF MENTAL ILLNESS, PSY650S HISTORY OF MENTAL ILLNESS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

NEUROSCI686S - Principles of Neuroimmunology

Course Description
Bidirectional communication between the brain and immune system, in disease and during normal function/homeostasis. Historical foundations of the field in disorders such as multiple sclerosis and HIV; the anatomy of CNS-immune connections; blood-brain-barrier function and dysfunction; leukocyte trafficking, surveillance, and infiltration of the CNS; cellular players including peripheral vs. CNS-resident immune cells and antigen presentation; neuroinflammation and neurodegenerative disease; recent literature highlighting the critical role of immune molecules in neural development and lifelong plasticity. Instructor consent required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY686S PRINCIPLES OF NEUROIMMUNOLOGY, NEUROBIO686S PRINCIPLES OF NEUROIMMUNOLOGY, IMMUNOL686S PRINCIPLES OF NEUROIMMUNOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

NEUROSCI751 - Neuroscience Bootcamp

Course Description
Neurobiology Bootcamp is a one week immersive lecture, discussion and laboratory course for graduate students in the Neurobiology Graduate Program and allied programs at the discretion of the instructors. The Duke Neuroscience Bootcamp is designed to (1) provide a common knowledge base of neuroscience fundamentals; (2) demystify the tools of the discipline - providing hands-on experience with techniques that are commonly used to explore cellular/molecular, circuits and computational neuroscience; and (3) introduce new students to a wide variety of Neurobiology Training Faculty and helpful resources for ensuring a successful graduate career.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
NEUROBIO751 NEUROSCIENCE BOOTCAMP

NEUROSCI755 - Interdisciplinary Program in Cognitive Neuroscience (IPCN) Independent Research Rotation

Course Description
Students will be involved in a research apprenticeship with a faculty member for hands-on experience with research efforts.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
7

NEUROSCI760L - Medical Neuroscience and Clinical Human Neuroanatomy

Course Description
Explore the structure, functional organization, and neurobiology of the human central nervous system, its integrative actions, and the impairments of sensation, action and cognition that accompany injury or disease. Features a variety of instructional methods, including hands-on examination and dissection of human brain specimens, asynchronous video tutorials, live seminars with clinical experts, patient-interviews, and cases studies. Employs team-based learning, with graduate students integrated into teams of first-year medical students for real-time problem-solving and discovery. Requires general knowledge of cell and molecular biology, mammalian physiology and anatomy.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BME760L MEDICAL NEUROSCIENCE, EVANTH760L MEDICAL NEUROSCIENCE

NEUROSCI773S - Reward and the Brain

Course Description
This course will provide an overview of the neural basis of reward. We will read and discuss the classic and contemporary literature on both animal and human models. Topics to be covered include: 1) historical development of the concept of reward and its relationship with reinforcement; 2) reward, homeostasis, and motivation; 3) relationship between reward and learning (reinforcement learning, Pavlovian and instrumental conditioning); 4) contribution of dopamine and other neuromodulators to reward; 5) neural substrates of intracranial self stimulation; 6) limbic cortico-basal ganglia circuit contributions to reward.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY773S REWARD AND THE BRAIN

NEUROSCI780S - Foundations of Behavioral and Computational Neuroscience

Course Description
Survey and in depth discussion of the methods, theory, and current research in the field of behavioral and computational neuroscience. Emphasis on animal models and neurobiological underpinnings of learning, memory, and cognition. Covers the latest developments in research on neuroanatomical, cellular and molecular substrates of behavior with emphasis on the influence of development, environment, and experience across the lifespan.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY780S FNDTION OF BEHAV/COMP NEUROSCI

PATHOL725 - Introduction to Systemic Histology

Course Description
This course takes an organ system approach to microscopic identification of a variety of cell types and tissues in histologic sections, with an emphasis on the histology of normal organs. A laptop computer is required for virtual microscopy; contact the instructor if you need specific information before registering.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PATHOL735S - Animal Models in Translational Research

Course Description
Working knowledge of the use of animal models in research, types of models and how to choose for translational relevance. Topics include the regulations governing the use of animals in research, principles of in vivo experimental design, as well as best practices for data collection, interpretation and reporting during animal study conduct. Students will be exposed to the principle elements that impart variability and bias in the generation of animal study data, and will learn best practices for the conduct of high quality animal studies that lead to reproducible data.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PATHOL750 - General Pathology

Course Description

This course presents broad concepts of disease and underlying molecular mechanisms, including identification of pathologic processes via both gross examination and virtual microscopy. A laptop computer is required for virtual microscopy. Prerequisite: Pathology 725.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

PATHOL785 - Molecular Aspects of Disease

Course Description

Background, investigative methods, and recent advances in understanding the molecular basis of selected diseases. In-depth focus on selected diseases whose defects are known at genetic or molecular levels. Prerequisites: introductory cell biology and biochemistry courses.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

PATHOL786 - Translational Aspects of Pathobiology

Course Description

Translational Research in Pathobiology is an integrated multidisciplinary course designed to provide students with the necessary tools to understand the principal components of the research processes involving patients or materials obtained from a human source. This course reflects the Department of Pathology's unique integration of traditional pathology research with experimental therapeutics in an environment that seeks to bridge the basic sciences and clinical medicine.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

PATHOL787 - Basic Biology of Cells as a Function of Age; Implication for Disease

Course Description

The objective of this course is to review the fundamentals of cell biology as a function of age and their contribution to pathologies associated with age-related diseases. This course will cover a wide range of principles, from concepts and theories of aging, to experimental models, cell regulation and signaling, and impact of age-related cellular changes on metabolism and disease development.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

PATHOL793 - Research Independent Study

Course Description
Permission of department required.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

PATHOL855S - Graduate Seminar in Pathology

Course Description
Graduate students in the Pathology program present their research in a formal presentation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PHARM533 - Essentials of Pharmacology and Toxicology

Course Description
Drug absorption, distribution, excretion, and metabolism. Structure and activity relationships; drug and hormone receptors and target cell responses. Instructor consent required. Prerequisite: introductory biology; Chemistry 201DL; Mathematics 21 and 122.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
MOLCAN533 ESSENTIALS PHARM/TOXICOL, NEUROSCI533 ESSENTIALS PHARM/TOXICOL

PHARM631 - Contemporary Topics in Membrane Biology

Course Description
This course will highlight modern topics regarding biological membranes and membrane proteins that are important for human physiology and disease. Topics include structure and dynamics of biological membranes, structure and function of membrane proteins that play critical roles in cell signaling, diseases related to dysfunction of membrane and membrane proteins, and current efforts on drug discovery. Major techniques used in membrane research will also be covered. The format will be a combination of lectures and discussion of primary literature. Students will be evaluated based on their class participation and performance at the final presentations. Reserved for graduate students; open to undergraduate students by instructor permission.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM631 MEMBRANE BIOLOGY, CMB631 MEMBRANE BIOLOGY, NEUROBIO631 MEMBRANE BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

PHARM680 - Molecular Cardiovascular Biology

Course Description
Overview of molecular mechanisms of cardiovascular biology and pathology. Various topics including the molecular basis of atherosclerosis, hypertension, myocardial hypertrophy, arrhythmias, cardiovascular metabolic disorders, angiogenesis, stem cells, and tissue regeneration in the cardiovascular system.

Grading Basis
Credit / No Credit

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
CELLBIO680 MOLECULAR CV BIOLOGY

PHARM693 - Research Independent Study in Science Education

Course Description
Individual research in a field of science education (with reference to pharmacology) at the precollege/college level, under the supervision of a faculty member, resulting in a substantive paper or written report containing significant analysis and interpretation of study results. Open to all qualified seniors and graduate students with consent of supervising instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHARM694 - Research Independent Study in Science Education

Course Description
Individual research in a field of science education (with reference to pharmacology) at the precollege/college level, under the supervision of a faculty member, resulting in a substantive paper or written report containing significant analysis and interpretation of study results. Open to all qualified seniors and graduate students with consent of supervising instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHARM710 - Papers and Grant Writing Workshop

Course Description
Introduction to grant and fellowship writing; writing assignment of two proposal topics; evaluation and critique of proposal by fellow students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CELLBIO710 SCIENTIFIC WRITING, NEUROBIO710 SCIENTIFIC WRITING, MOLCAN710 SCIENTIFIC WRITING

PHARM730 - Stem Cell Course

Course Description
The course is designed for first-year graduate students to learn the fundamentals of stem cell biology and to gain familiarity with current research in the field. The course will be presented in a lecture and discussion format based on the primary literature. Topics include: stem cell concepts, methodologies for stem cell research, embryonic stem cells, adult stem cells, cloning and stem cell reprogramming and clinical applications of stem cell research. Prerequisites: undergraduate level cell biology, molecular biology, and genetics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MOLCAN730 STEM CELL COURSE, CELLBIO730 STEM CELL COURSE, DSCB720 STEM CELL COURSE

PHARM733 - Experimental Design and Biostatistics for Basic Biomedical Scientists

Course Description
The use and importance of statistical methods in laboratory science, with an emphasis on the nuts and bolts of experimental design, hypothesis testing, and statistical inference. Central tendency and dispersion, Gaussian and non-Gaussian distributions, parametric and nonparametric tests, uni- and multivariate designs, ANOVA and regression procedures. Ethical issues in data handling and presentation. Student presentations in addition to formal lectures. Intended for third-year graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BME733 EXPERIMENT DESIGN & STATISTICS, NEUROBIO733 EXPERIMENT DESIGN & STATISTICS, CMB733 EXPERIMENT DESIGN & STATISTICS, MOLCAN733 EXPERIMENT DESIGN & STATISTICS

PHARM761 - Cellular Signaling Module I: GPCR Signaling and Disease

Course Description
This module will cover the basic mechanism of signal transduction through G protein coupled receptors (GPCR) and how they control a wide array of biological functions from vision to reproduction and are the largest targets of therapeutic interventions. How new concepts in our understanding of their signal transduction mechanisms is leading to the development of new and improve therapies for various disorder.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOCHEM761 CELLULAR SIGNALING MODULE I, CELLBIO761 CELLULAR SIGNALING MODULE I, MOLCAN761 CELLULAR SIGNALING MODULE I

PHARM762 - Cellular Signaling Module II: Intracellular Signaling and Disease

Course Description

This module will cover how ion channels and intracellular nuclear receptors control cellular functions mediated through transcription or calcium signaling to regulate physiological processes in health and disease.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

Crosslisted Courses

BIOCHEM762 CELLULAR SIGNALING MODULE II, CELLBIO762 CELLULAR SIGNALING MODULE II, MOLCAN762 CELLULAR SIGNALING MODULE II

PHARM763 - Cellular Signaling Module III: Growth Factor Pathway in Development and Disease

Course Description

The focus of this module is on signaling pathways induced by extracellular factors that regulate growth, survival, and development, and their deregulation in disease including cancer. Among the pathways covered are those regulated by ligand-activated Receptor Tyrosine Kinases, Wnt/beta-catenin signaling, Notch signaling, and Hedgehog signaling.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

Crosslisted Courses

BIOCHEM763 CELLULAR SIGNALING MODULE III, CELLBIO763 CELLULAR SIGNALING MODULE III, MOLCAN763 CELLULAR SIGNALING MODULE III

PHARM780 - Graduate Student Seminar

Course Description

A presentation and discussion course in which program faculty and graduate students review recent progress in contemporary areas of Pharmacology and Cancer Biology. Provides an important avenue for evaluation and feedback for graduate student research and communication skills and is required for all students pursuing their PhD degree in Pharmacology and Molecular Cancer Biology.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

2

Max Units:

2

Crosslisted Courses

MOLCAN780 STUDENT SEMINAR

PHARM793 - Research in Pharmacology and Molecular Cancer Biology

Course Description

Laboratory investigation in various areas of pharmacology. Credit to be arranged.

Grading Basis

Graded

Units

Min Units:
1

Max Units:
10

Crosslisted Courses
MOLCAN793 RESEARCH PHARM/MCB

PHARM814 - Integrated Case Studies in Toxicology

Course Description
Students are assigned topics relative to their chosen research discipline in toxicology and are asked to develop case studies to present at a roundtable workshop. Emphasis on review and analysis of toxicological problems from a holistic (multidisciplinary) viewpoint. Offered on demand.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ENVIRON814 CASE STUDIES TOXICOLOGY

PHARM815 - Focused Topics in Toxicology

Course Description
A contemporary advanced toxicology research area covered with readings from the current primary literature. An integrative review of the topic prepared as a collaborative effort. Consent of instructor required. Prerequisites: Pharmacology 533 and 847S.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ENVIRON815 FOCUSED TOPICS IN TOXICOLOGY

PHARM818 - Molecular Mechanisms of Oncogenesis

Course Description
This course is a lecture presentation and discussion course on the molecular mechanisms underlying cancer development in which students complete periodic tests, present a paper, and work in a group to write and defend a grant proposal. The objective of the course is to provide an opportunity for in-depth discussions of molecular mechanisms underlying the development of human cancers. The course is intended for second-year students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MOLCAN818 MOLEC MECH ONCOGENESIS

PHARM835 - Innovations in Drug Development

Course Description
Introduction to major issues in developing a drug to treat a disease in an interdisciplinary lecture-based and team-based learning environment. Translation of principles in biomedical sciences, biomedical engineering, and chemistry along with innovative approaches to develop a hypothetical drug for treating a disease of choice. Hypothetical development of model compounds, target analysis, and in vitro and in vivo models to test drug efficacy. Course requires one of the following (or equivalent): Pharmacology and Cancer Biology 533, Chemistry 518, or Biomedical Engineering 577.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
I&E835 INNOVATIONS-DRUG DEVELOPMENT

PHARM847S - Seminar in Toxicology

Course Description
A weekly research seminar throughout the year is required of participants in the Toxicology Program. Students, faculty, and invited speakers present their findings.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ENVIRON847S SEMINAR IN TOXICOLOGY

PHARM848S - Seminar in Toxicology

Course Description
A weekly research seminar throughout the year is required of participants in the Toxicology Program. Students, faculty, and invited speakers present their findings.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ENVIRON848S SEMINAR IN TOXICOLOGY

PHARM899 - Internship

Course Description
This is a required course for domestic and international students participating in the Pharmacology and Cancer Biology Internship program. Eligible students include those earning their PhD in Pharmacology, Molecular Cancer Biology or those students supported by the PSTP T32. Students gain practical experience by taking an internship in industry or government. The internship can be local or at another US location with the approval of the instructor. Requires permission from the student's advisor, the DGS and the internship program director. A final report and presentation are required post-internship outlining work activity and relevance to Pharmacology or Cancer Biology.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

PHIL502S - Comparative Ethics

Course Description
Chinese and Western ethics compared, including conceptions of the virtues, the good life, right action, and the person. Instructor permission required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PHIL503S - Contemporary Ethical Theories

Course Description
The nature and justification of basic ethical concepts in the light of the chief ethical theories of twentieth-century British and American philosophers. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI582S CONTEMP ETHICAL THEORIES

PHIL508S - Political Values

Course Description
Why should we prefer democracy to other forms of government? Why should we obey democratic decisions we think conflict with our political values and commitments? What is the best way to answer questions of this sort? Democracy is under assault across the globe. And recent years have witnessed theoretical and philosophical reconsideration of the best arguments for self-rule. This interdisciplinary class will critically examine those works, seeking to understand democracy, its grounds and its rivals. Course has no prerequisites, but previous course work in political theory, philosophy and related subjects will be helpful.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI514S POLITICAL VALUES

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, CZ - (CZ) Civilizations

PHIL510S - Adversarial Ethics

Course Description
Course attempts to identify general principles for designing the rules & regulations for deliberately adversarial institutions (ie; markets, electoral systems/ legislatures, criminal law, warfare, sports). Looks at the special virtues of sportsmanship, professionalism, business ethics, etc. people are expected to follow within these hyper-competitive contexts. By examining ways the criteria for being an ethical businessperson, lawyer, soldier, and so on may differ from the criteria for simply being an 'ethical person', this course seeks to prepare students for future professional roles in these adversarial domains. No formal pre-requisites.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ETHICS510S ADVERSARIAL ETHICS, POLSCI585S ADVERSARIAL ETHICS

General Education Curriculum Codes
(EI) Ethical Inquiry, (SS) Social Sciences

PHIL511S - Plato

Course Description
Selected dialogues.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST572S PLATO

PHIL512S - Aristotle

Course Description
Selected topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST573S ARISTOTLE

PHIL516S - Life's Purpose

Course Description
When we ask, 'Is there a purpose to my life,' is that the same as asking about purpose to all life? Do bacteria have purposes? Is there purpose in the universe writ large? These are questions about teleology. In this course, we consider what teleology is, how it works in organisms (& other systems, like self-driving cars). Historical investigation from Aristotle to Darwin and modern texts. Examines how teleology has influenced biology, how advances in biology have affected teleological thinking in areas from metaphysics to ethics, and implications for purposes in our own lives. Recommended prerequisite: college-level biology or philosophy course or instructor consent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY516S LIFE'S PURPOSE

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

PHIL536S - Hegel's Political Philosophy

Course Description
Within context of Hegel's total philosophy, an examination of his understanding of phenomenology and the phenomenological basis of political institutions and his understanding of Greek and Christian political life. Selections from Phenomenology, Philosophy of History, and Philosophy of Right. Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI676S HEGEL'S POL PHILOSOPHY, GERMAN575S HEGEL'S POL PHILOSOPHY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, SS - (SS) Social Sciences

PHIL537S - Nietzsche's Political Philosophy

Course Description
Study of the thinker who has, in different incarnations, been characterized as the prophet of nihilism, the destroyer of values, the father of fascism, and the spiritual source of postmodernism. An examination of his philosophy as a whole in order to come to terms with its significance for his thinking about politics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI577S NIETZSCHE'S POLIT PHILOS, GERMAN576S NIETZSCHE'S POLIT PHILOS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

PHIL539S - Race Theory: Biological Classification and Moral Implications

Course Description
Topics to include: Biological classification theory and its applications to humans; The fit, or lack thereof, of biological categories and folk classifications of race; The historical/political motivations behind human racial classifications; The role of race in moral interactions; and The role of race in the construction of personal identity.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry, (CZ) Civilizations

PHIL541S - Historical and Philosophical Perspectives on Science

Course Description
An integrated introduction to the nature of science and scientific change, and its impact on society. Counts as elective for the Science & Society Certificate Program.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GSF541S HIST/PHIL PERSPECT ON SCIENCE, LIT521S HIST/PHIL PERSPECT ON SCIENCE, HISTORY577S HIST/PHIL PERSPECT ON SCIENCE

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (CZ) Civilizations

PHIL550SL - Digital Publishing: Concepts and Practice

Course Description
Seminar cultivating theoretical, critical, and historical understanding of scholarly publishing through study of contemporary digital publishing and related issues in the digital humanities. Themes include markers of authorship and authority; contextual influences on interpretation; theories of audience. Hands-on work researching and building an openly accessible, web-based scholarly resource. Guest lecturers providing insight into current legal, technical, and ethical issues in digital publishing. Theoretical readings; analysis, critique, and reflection assignments; team-based discussion and collaboration; ongoing application to individual student projects.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS550SL DIGITAL PUBLISHING

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

PHIL551S - Epistemology

Course Description
Selected topics in the theory of knowledge; for example, conditions of knowledge, skepticism and certainty, perception, memory, knowledge of other minds, and knowledge of necessary truths.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

PHIL552S - Metaphysics

Course Description
Selected topics: substance, qualities and universals, identity, space, time, causation, and determinism.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

PHIL555S - Topics in Philosophy of Mind

Course Description
One or more topics such as mental causation, animal minds, artificial intelligence, and foundations of cognitive science. Includes relevant literature from fields outside philosophy (for example, psychology, neuroscience, ethology, computer science, cognitive science).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI555S PHILOSOPHY OF MIND (TOP)

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

PHIL566S - Topics in Early Modern Political Thought from Machiavelli to Mills

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI579S TOPICS EARLY MOD POL THOUGHT

PHIL571S - Ancient Political Philosophy

Course Description
Intensive analysis of the political philosophy of Plato, Aristotle, and other ancient theorists. Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST571S ANCIENT POL PHILOSOPHY, POLSCI575S ANCIENT POL PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

PHIL572 - Frankfurt School Critical Theory

Course Description
This course serves as an introduction to the 'Frankfurt School' and Critical Theory with particular emphasis upon rationality, social psychology, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward an understanding of the analyses they developed and consider their validity. All readings and discussions are in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN570 FRANKFURT SCHOOL, POLSCI570 FRANKFURT SCHOOL, LIT575 FRANKFURT SCHOOL

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

PHIL590 - Special Topics in Philosophy Lecture

Course Description
Topics vary each semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL590S - Special Fields of Philosophy Seminar (Topics)

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHIL616S - Literature and Philosophy

Course Description
Traditionally, literary scholars apply philosophy to literature; philosophers mine literature for examples illustrating already existing philosophies. This course aims to find ways for philosophy and literature to shed light on each other. Can literature do philosophical work? How can philosophy be read? We will first study classical encounters between philosophy and literature in Plato, Aristotle, Hegel and Kant. Philosophers might include Sartre, Beauvoir, Fanon, Murdoch, Nussbaum, Derrida, Diamond, and Cavell. Theater and film: Greek tragedy, Shakespeare, Ibsen, Hollywood movies. Novels by Coetzee, Sebald, and recent autofiction. A major focus of the class will be ethics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH616S LITERATURE AND PHILOSOPHY, LIT616S LITERATURE AND PHILOSOPHY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

PHIL625S - British Empiricism

Course Description
A critical study of the writings of Locke, Berkeley, or Hume with special emphasis on problems in the theory of knowledge.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL629S - Topics in the History of Philosophy

Course Description
Topics in one or more periods in the history of philosophy (for example, ancient, medieval, or modern) such as skepticism, mind-body relations, the nature of persons and personal identity, the relation between physics and metaphysics, causation and explanation.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHIL633S - Methodology of the Empirical Sciences

Course Description
Recent philosophical discussion of the concept of a scientific explanation, the nature of laws, theory and observation, probability and induction, and other topics. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL634S - Problems in the Philosophy of Biology

Course Description
Selected topics, with emphasis on evolutionary biology: the structure of evolutionary theory, adaptation, teleological or teleonomic explanations in biology, reductionism and organicism, the units of selection, and sociobiology. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY555S PHILOSOPHY OF BIOLOGY

PHIL640S - Philosophical Psychology

Course Description
A study of recent work on the nature of the self and the nature and function of consciousness. Work from philosophy, psychology, cognitive neuroscience, and evolutionary biology will be discussed.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL650S - Topics in Formal Philosophy

Course Description
Topics selected from formal logic, philosophy of mathematics, philosophy of logic, or philosophy of language.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL678S - Pragmatism

Course Description
A study of the philosophical school of American Pragmatism. Involves close reading, discussion, and analysis of the major pragmatist philosophers of the late 19th and early 20th centuries, including Peirce, James, and Dewey, as well as more recent pragmatists, such as Rorty. Topics include pragmatic analyses of belief, action, will, and experience and their applications to human inquiry, scientific method, ethics, and political philosophy.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CZ) Civilizations

PHIL681S - Wittgensteinian Perspectives on Literary Theory

Course Description
Key questions in literary theory reconsidered from the point of view of ordinary language philosophy (Wittgenstein, J. L. Austin, Cavell). Topics will vary, but may include: meaning, language, interpretation, intentions, fiction, realism and representation, voice, writing, the subject, the body, the other, difference and identity, the politics of theory. New perspectives on canonical texts on these subjects.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT681S WITTGENSTEIN AND LIT THEORY, ENGLISH582S WITTGENSTEIN AND LIT THEORY

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

PHIL682S - Simone de Beauvoir

Course Description
An in-depth study of Beauvoir as a philosopher, novelist, memoirist and feminist theorist. Understanding Beauvoir as an existentialist intellectual in mid-century France.Emphasis on The Second Sex. Wide-ranging reading of Beauvoir's novels, non-fiction, and memoirs, both with relevant philosophers and theorists, such as Sartre, Merleau-Ponty, and with more recent feminist theory.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT682S SIMONE DE BEAUVOIR, FRENCH682S SIMONE DE BEAUVOIR, GSF682S SIMONE DE BEAUVOIR

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

PHIL692S - Bioethics

Course Description
Course offers a graduate-level intro to bioethics. Topics include the history of bioethics; research ethics; limit setting in health care; and reproductive ethics. Course primarily intended for seniors and graduate students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHIL693S - Causation

Course Description
A study of the philosophical foundations of causation. Involves close reading and discussion of classic modern philosophical analyses of causation, with special reference to applications in the philosophy of science including the social sciences.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHIL701S - Seminar in Special Fields of Philosophy

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PHIL702S - ProSeminar in Metaphysics and Epistemology

Course Description
Close study of texts which drove the development of analytic philosophy & informed current research. Covers texts any analytic philosopher needs to be familiar with. Discussion-based classroom sessions focus on one or two key texts with corresponding reading questions and assigned weekly 2-3 page philosophical essay.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHIL703S - Proseminar in Ethics

Course Description
Foundational course for first and second year PhD students only. Complements the pro seminar in metaphysics and epistemology. Pro seminars aim to build cohort cohesion among entering PhD students/equip them with PhD level skills in textual analysis and philosophical writing. Seminar examines classic or important contemporary articles in ethics or political philosophy, as selected by instructors.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL754S - Principles in Cognitive Neuroscience II

Course Description
Introduction to the cognitive neuroscience of emotion, social cognition, executive function, development, and consciousness. Topics also include cognitive disorders, and computer modeling. Highlights current theories, methodological advances, and controversies. Students evaluate and synthesize findings across a variety of research techniques. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROBIO760S PRINCIPLES COGNITV NEUROSCI II, PSY760S PRINCIPLES COGNITV NEUROSCI II

PHIL785S - Philosophy of Biology

Course Description
Interdisciplinary discussion group focused on topics in the philosophy of biology. No formal prerequisites, though a background in philosophy or biology is desirable. This course is repeatable over multiple semesters.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

PHIL790 - Philosophy Special Topics

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PHIL790S - Seminar in Special Fields of Philosophy

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHIL795S - Seminar in Teaching Philosophy

Course Description
Source of pedagogical instruction for graduate students assigned as teaching assistants or course instructors in philosophy courses. Faculty advice about syllabi preparation, discussion of problems that can arise in the college classroom, etc. Course is repeatable across multiple semesters.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

PHIL796S - Work in Progress Seminar

Course Description
For students enrolled in the doctoral program in philosophy. Practice interviews (including filming when possible), mock job talks, etc. Course is repeatable across multiple semesters.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

PHIL797S - Dissertation Seminar

Course Description
Seminar required in the spring semester for grad students going on the job market the following fall. Each student presents material from their dissertation, for discussion with the other graduate students in the seminar and the faculty instructor. Vital part of students preparation for the job market. Note: student must have passed doctoral qualifying examination. Course is repeatable across multiple semesters.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

PHIL798S - Philosophical Interlocution

Course Description
For Philosophy Doctoral Students only: required for all students in residence. Frequently includes meetings with Colloquia speakers to discuss background or related topics. Course is repeatable across multiple semesters.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

PHIL863S - Eastern & Western Conceptions of Human Nature, Ethics, & Politics

Course Description
Course deals with differences of value by understanding a variety of traditions: explores conceptions of human nature & how these connect with views about the good human life, duties, responsibilities, rights, & proper forms of political governance. International team leads discussions from comparative & cross-cultural perspectives. Critically examines Western sources, Chinese/Korean sources, Hindu, Buddhist, & Jain sources- analyzing how these ideas shape contemporary Western/East Asian/South Asian culture. All in context of contemporary scientific sources on human nature from psychology, anthropology, & primatology.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHIL870S - Philosophy of Emotions

Course Description
Seminar on recent work on the philosophy of the emotions. Do we know emotions through their distinctive phenomenal feels or in some other way involving cultural learning of situations, norms, and scripts? How culturally plastic are emotions? What social and ethical norms govern emotional expression? What social and ethical norms ought to govern how we do anger and shame? Seminar will focus on new work on anger and shame.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHIL947S - Philosophy and Literature

Course Description
Looks at what defines subject matter/boundaries/methodologies/products of analytic philosophical discourse & literature (mostly novels & plays). Central question: Are there ways of treating philosophical problems in ethics, epistemology, & metaphysics that are well-suited to expression in literature than in standard analytic philosophical discourse? Discusses advantages/disadvantages of different idioms, disciplines for addressing phil problems; what lit can teach about phil problems relating to mind/morals/meaning of life. Prior to seminar students study A. J. Ayer's Language, Truth and Logic, (seminar's exemplar for analytic philosophy). Approved course for PAL Certificate.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT882S PHILOSOPHY & LITERATURE

PHIL950S - Neurophilosophy

Course Description
Status of such concepts of the 'self,' 'person,' 'free will' in the age of mind science. Conflict between scientific and humanistic images of persons. Varieties of naturalism, neurophilosophy, and neurophenomenology Explanation, prediction, correlations, identities, reduction, levels, laws, functions, and mechanisms in mind science. The logical relations between neurobiology, cognitive, and affective neuroscience, cognitive science, psychology, and social science(s).

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY950S NEUROPHILOSOPHY

PHIL951S - Free Will and Moral Responsibility in light of Philosophy & Neuroscience

Course Description
Discusses selection of recent work on issues like: What is free will? Is it compatible with determinism? With Indeterminism? With external sources for our actions? Does free will require reasons-responsiveness? Second-order endorsement? Do our (mental) wills really cause our (physical) actions? How is free will related to moral responsibility? Is anyone ever fully morally responsible? Why does it matter? Do people who lack moral responsibility ever deserve to be punished? Students encouraged to develop their own views.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHOTO535S - Camera Asia

Course Description
Examines how the art and technology of photography have changed how we study and understand the historical past, with a focus on China, India, and Japan. Analyzes arrival of the camera as a historical event, along with photographers and studios. Evaluates ways in which the new technology was embraced, and considers how the camera reconfigured attitudes towards the body and gender relations, nation building, war, catastrophes and death.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS535S CAMERA ASIA, HISTORY530S CAMERA ASIA, ICS531S CAMERA ASIA, ARTHIST535S CAMERA ASIA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

PHOTO650S - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Graduate students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS650S BLACK CAMERA, AAAS531S BLACK CAMERA, CINE650S BLACK CAMERA, ARTHIST650S BLACK CAMERA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

PHOTO655S - The Photographic Portfolio

Course Description
Students identify photographic territory to explore and build a body of work. Images are extensively work-shopped for sequencing. Particular emphasis on the making of high quality prints. Semester culminates in the production of finished portfolios in three formats: print, digital, and exhibition or installation. Student's body of work to be informed by relevant precedents from history of photography, with an emphasis on identifying bodies of photographic work that communicate something larger than a single idea. Instructor consent required; this is the same course as Visual Arts 455, with additional graduate level work required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS655S THE PHOTOGRAPHIC PORTFOLIO

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

PHYSICS505 - Introduction to Nuclear and Particle Physics

Course Description
Introductory survey course on nuclear and particle physics. Phenomenology and experimental foundations of nuclear and particle physics; fundamental forces and particles, composites. Interaction of particles with matter and detectors. SU(2), SU(3), models of mesons and baryons. Weak interactions and neutrino physics. Lepton-nucleon scattering, form factors and structure functions. QCD, gluon field and color. W and Z fields, electro-weak unification, the CKM matrix, Nucleon-nucleon interactions, properties of nuclei, single and collective particle models. Electromagnetic and hadronic interactions with nuclei. Nuclear reactions and nuclear structure, nuclear astrophysics. Relativistic heavy ion collisions. Prerequisite: for undergraduates, Physics 464, 465; for graduate students, Physics 764, which may be taken concurrently.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS509 - Quantum Nanophysics

Course Description
Quantum phenomena in nanostructures, emphasizing interference, dimensionality, and electron interactions. Uses current research topics to introduce fundamental building blocks of the subject, thereby providing in addition a background in solid-state physics. Topics covered may include: graphene, carbon nanotubes, and topological insulators; scanning tunneling microscopy; quantum point contacts and quantum dots; spintronics, single electronics, and molecular electronics; superconducting qubits; giant and colossal magnetoresistance; quantum Hall effect. Emphasis placed on phenomena observed in the last two decades. Prerequisite: Physics 464 or instructor consent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences

PHYSICS513 - Dynamics of Complex Systems

Course Description
An introduction to the quantitative description and analysis of physical systems with complex dynamics and how the properties of such systems change as parameters are varied. Part of the course will discuss dynamical systems described by just a few variables and related concepts such as model equations, phase space, linear stability, bifurcations, universality, attractors, fractals, chaos, and time series analysis. Other topics will vary by instructor and might include spatiotemporal dynamics, dynamical networks, and the control of dynamical systems. Prerequisite: MATH 216, the PHYSICS 161/162 sequence, and COMPSCI 101, or their equivalents.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI524 DYNAMICS OF COMPLEX SYSTEMS, NCS513 DYNAMICS OF COMPLEX SYSTEMS

General Education Curriculum Codes
R - (R) Research, NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

PHYSICS516 - Quantum Materials: Introduction to Solid State Physics

Course Description
Microscopic structure of solids, liquids, liquid crystals, polymers, and spin systems; elastic scattering and long-range order; topological defects; electronic structure of crystals (metals and semiconductors); phonons and inelastic scattering; magnetism; superconductivity. Recommended prerequisite: Physics 464, 465, and 563.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS521 - Radiation Physics

Course Description
A course covering the basics of ionizing and non-ionizing radiation, atomic and nuclear structure, basic nuclear and atomic physics, radioactive decay, interaction of radiation with matter, and radiation detection and dosimetry. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDPHY500 RADIATION PHYSICS

PHYSICS522 - Special and General Relativity

Course Description
Review of special relativity; ideas of general relativity; mathematics of curved space-time; formation of a geometric theory of gravity; Einstein field equation applied to problems such as the cosmological red-shift and blackholes. Prerequisite: Physics 361 and Mathematics 216 or equivalents.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

PHYSICS523 - Modern Medical Diagnostic Imaging System

Course Description
This course covers the mathematics, physics and instrumentation of several modern medical imaging modalities starting with a review of applicable linear systems theory and relevant principles of physics. Modalities studied include X-ray radiography (film-screen and electronic), computerized tomography, ultrasound and nuclear magnetic resonance imaging. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDPHY530 MODERN DIAGNOSTIC IMAGING SYST

PHYSICS544 - Nonlinear Optics

Course Description
This course is focused on fundamentals and applications of nonlinear light-matter interactions. The following topics will be considered: physical mechanisms of optical nonlinearity, nonlinear optical susceptibilities, intensity dependent refractive index, nonlinear wave mixing processes, optical self-action effects including self-focusing and optical solitons, optical phase conjugation, stimulated Brillouin and stimulated Raman scattering, supercontinuum generation, light filamentation, and nonlinear optical materials.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE544 NONLINEAR OPTICS

PHYSICS549 - Optics and Photonics Seminar Series

Course Description
Weekly seminar on the current research topics in the field of optics and photonics.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ECE549 OPTICS & PHOTONICS SEMINAR SER, BME609 OPTICS & PHOTONICS SEMINAR SER

PHYSICS555 - Introduction to Cosmology

Course Description
Cosmology is the study of the origin, structure and evolution of the Universe itself. The goal of this course is to provide an advanced undergraduate or introductory graduate description of the 'standard' big bang theory of the Universe, the Lambda-Cold Dark Matter model, that includes recent experimental developments. Topics include: the observational and theoretical basis for the model; spacetime and the Friedmann-Lemaitre-Robertson-Walker metric; big bang cosmology and the Universe's contents and dynamics; the cosmic microwave background; formation of galaxies, large-scale structure, and gravitational lensing; dark matter and dark energy; current and future observational experiments. Recommended prerequisite: Physics 361 and Mathematics 216 or Physics 264L.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences, (QS) Quantitative Studies

PHYSICS556 - Stellar Astrophysics

Course Description
This course surveys the key physics of stellar structure, interiors, and evolution. The focus is on the essential concepts for understanding dynamical processes in stars, the relevant equations and their approximate solutions. Topics include: timescales, scaling relations, equations of state, radiative transfer, convection, nuclear reactions and rates, white dwarfs, neutron stars, and supernovae. We will aim throughout the course to impart a better physical and intuitive understanding of the essential meaning of the equations, processes, and principles that govern stars of all sort, and of their universality. The intended audience is graduate students and upper-level undergraduates. Prerequisite: Physics 305.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(NS) Natural Sciences, (QS) Quantitative Studies

PHYSICS566 - Computational Physics

Course Description
Introduction to numerical algorithms and programming methodologies that are useful for studying a broad variety of physics problems via simulation. Applications include projectile motion, oscillatory dynamics, chaos, electric fields, wave propagation, diffusion, phase transitions, and quantum mechanics. Prerequisites: Physics 264L and 363. Experience with a programming language is desirable, but can be acquired while taking the course.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS567 - Theoretical Neuroscience

Course Description
Introductory course on theoretical neuroscience. Neuronal biophysics: ions, membranes, channels. Single neuron models: Hodgkin-Huxley, 2D reductions, phase plane analysis. Leaky integrate-and-fire model, response to stochastic inputs. Models of synapses and synaptic plasticity. Models of networks at various scales. Network dynamics: rate models, networks of spiking neurons. Coding and decoding by single neurons and populations of neurons. Unsupervised learning, supervised learning, reinforcement learning. Adequate for any graduate student in physics or other quantitative fields (mathematics, statistics, engineering, computer science) and undergraduate majors in such fields.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI567 THEORETICAL NEUROSCIENCE

General Education Curriculum Codes
(NS) Natural Sciences, (QS) Quantitative Studies

PHYSICS590 - Selected Topics in Theoretical Physics

Course Description
Topics vary as indicated on Physics Department Web site. Consent of Instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHYSICS603 - Representation Theory

Course Description
Representation theory of finite groups, Lie algebras and Lie groups, roots, weights, Dynkin diagrams, classification of semisimple Lie algebras and their representations, exceptional groups, examples and applications to geometry and mathematical physics. Prerequisite: Mathematics 501 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH603 REPRESENTATION THEORY

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

PHYSICS621 - Advanced Optics

Course Description
This course presents a rigorous treatment of topics in Photonics and Optics targeted at students with an existing photonics or optics background. Topics will include, Optical Sources, Statistical Optics and Coherence Theory, Detection of Radiation; Nonlinear Optics; Waveguides and Optical Fibers; Modern Optical Modulators; Ultrafast lasers and Applications. These topics will be considered individually and then from a system level perspective. Prerequisite: Electrical and Computer Engineering 340L or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BME552 ADVANCED OPTICS, ECE541 ADVANCED OPTICS

PHYSICS622 - General Relativity

Course Description
This course introduces the concepts and techniques of Einstein's general theory of relativity. The mathematics of Riemannian (Minkowskian) geometry will be presented in a self-contained way. The principle of equivalence and its implications will be discussed. Einstein's equations will be presented, as well as some important solutions including black holes and cosmological solutions. Advanced topics will be pursued subject to time limitations and instructor and student preferences. Prerequisite: A familiarity with the special theory and facility with multivariate calculus.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH527 GENERAL RELATIVITY

PHYSICS623 - Quantum Information Theory

Course Description
Introduction to fundamental ideas of Quantum Information theory, such as entanglement, quantum entropy, mutual information, and data compression. A primary goal of this field is to understand how quantum effects, such as entanglement, can enhance communication protocols. These concepts are also essential for quantifying noise and decoherence in quantum computers. Furthermore, they have various applications in other areas, including quantum thermodynamics and many-body physics. Prerequisite: [ECE 420 or ECE 520 or ECE 521 or PHYSICS 464] and [ECE 586 or MATH 216 or MATH 218D-1 or MATH 218D-2 or MATH 221].

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE623 QUANTUM INFORMATION THEORY

PHYSICS624 - Open Quantum Systems

Course Description

Experimental quantum systems are inevitably coupled to their environment. This leads to dissipation and decoherence, which pose challenges for quantum technology but can also be used to drive novel effects. Open quantum systems are described using density operators, quantum channels, and second quantization. We will derive the Lindblad master equation which can explain dissipation, decoherence, and thermalization. Experimental platforms for quantum computation and simulation will be discussed from this viewpoint. Advanced concepts covered may include nonequilibrium phase transitions, quantum trajectories, tensor networks, and the Keldysh formalism. Recommended prerequisite: PHYSICS 464 or ECE 521

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE624 OPEN QUANTUM SYSTEMS

General Education Curriculum Codes
NS - (NS) Natural Sciences, QS - (QS) Quantitative Studies

PHYSICS627 - Quantum Computing

Course Description

Fundamental concepts and progress in quantum information science. Quantum circuits, quantum universality theorem, quantum algorithms, quantum operations and quantum error correction codes, fault-tolerant architectures, security in quantum communications, quantum key distribution, physical systems for realizing quantum logic, quantum repeaters and long-distance quantum communication. Prerequisites: Electrical and Computer Engineering 521 or Physics 464 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE523 QUANTUM COMPUTING

General Education Curriculum Codes
(NS) Natural Sciences, (QS) Quantitative Studies

PHYSICS628 - Quantum Error Correction

Course Description

In this course, we cover two related topics: quantum error correction and quantum computer architectures. In the beginning of the course, we will cover the basics of quantum error correction and develop the tools needed to understand modern methods of fault-tolerant quantum computation. In the end of the course, we will discuss how quantum error correction influences the design of a large-scale quantum computer. Prerequisite: ECE 523/PHYSICS 627 or ECE 420 or ECE 520.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE621 QUANTUM ERROR CORRECTION

PHYSICS670 - Experimental Methods in Condensed Matter Physics

Course Description
This course targets graduate and advanced undergraduate students seeking a comprehensive exploration of experimental methodologies in condensed matter physics. The methodologies covered encompass key techniques like diffraction, microscopy, and spectroscopy, all of which play pivotal roles in unraveling phenomena at the microscopic level. The course begins by providing foundational insights into the scientific principles underpinning each technique. It then proceeds to present contemporary instruments and tools employed in these experimental approaches. Real-world applications are showcased to underscore the practical significance and efficacy of the discussed methodologies. Recommended prerequisite: Although specific prerequisites are not mandatory for enrollment, prospective participants are advised to possess a solid academic foundation acquired through prior completion of an undergraduate program. Familiarity with concepts such as electromagnetism, optics, classical wave theory, and quantum mechanics is highly beneficial, enabling students to derive maximum benefit from the course content.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

PHYSICS671 - Atomic Physics and Quantum Optics

Course Description
Atomic structure. The linear and nonlinear interaction of electromagnetic radiation with atoms. Topics include cavity quantum electrodynamics, squeezing of the electromagnetic field, cooling and trapping of atoms and ions, and atomic quantum gates. Prerequisite: Physics 362D and 465.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
NS - (NS) Natural Sciences

PHYSICS711 - Intermediate Mechanics

Course Description
Newtonian mechanics at the intermediate level, Lagrangian mechanics, linear oscillations, chaos, dynamics of continuous media, motion in non-inertial reference frames. An assignment will ask the student to relate this course to their PhD-level research interests. Department consent is required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS712 - Electricity and Magnetism

Course Description
Electrostatic fields and potentials, boundary value problems, magnetic induction, energy in electromagnetic fields, Maxwell's equations, introduction to electromagnetic radiation. An assignment will ask the student to relate this course to their PhD-level research interests. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS713 - Thermal Physics

Course Description
Thermal properties of matter treated using the basic concepts of entropy, temperature, chemical potential, partition function, and free energy. Topics include the laws of thermodynamics, ideal gases, thermal radiation and electrical noise, heat engines, Fermi-Dirac and Bose-Einstein distributions, semiconductor statistics, kinetic theory, and phase transformations. An assignment will ask the student to relate this course to their research. Department consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS714 - Quantum Mechanics 1

Course Description
Introduction to non-relativistic quantum mechanics. Topics include experimental foundations, wave-particle duality, Schroedinger equation, wave function interpretation, the state vector, Hilbert space, Dirac notation, Heisenberg uncertainty principle, one-dimensional quantum problems, tunneling, the harmonic oscillator, three-dimensional quantum problems, angular momentum, the hydrogen atom, spin, angular momentum addition, identical particles, elementary perturbation theory, fine/hyperfine structure of hydrogen, dynamics of two-level systems, and applications. An assignment will ask the student to relate this course to their research. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS760 - Mathematical Methods of Physics

Course Description
Includes topics in probability theory, complex analysis, asymptotic expansions, group theory, Fourier analysis, Green functions, ordinary and partial differential equations; and use of Mathematica.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS761 - Classical Mechanics

Course Description
Lagrangian and Hamiltonian formalisms for describing the dynamics of classical systems including point particles, rigid bodies, and continuous media; principle of least action; symmetries, conservation laws, and Noether's theorem; small oscillations about stable equilibria; canonical transformations and canonical perturbation theory; Euler and Navier-Stokes equations for describing fluid motion including laminar and turbulent flows; dynamical properties of elastic solids; additional possible topics include wave propagation on strings and membranes, driven dissipative systems, and nonlinear dynamical systems.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS762 - Electrodynamics

Course Description
Maxwell's equations, conservation laws, electrostatics, magnetostatics, dielectric and magnetic materials, electromagnetic induction, electromagnetic waves, elementary electromagnetic radiation, special relativity, and covariant formulation of electrodynamics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS763 - Statistical Mechanics

Course Description
Canonical and grand canonical ensembles, quantum statistics, ideal Bose and Fermi systems, classical non-ideal gases, virial expansion, phase transitions, fluctuations, transport coefficients, non-equilibrium processes.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS764 - Quantum Mechanics

Course Description
Angular momentum and symmetries in quantum mechanics from group theory viewpoint; time-independent and time-dependent perturbation theory; path integral formulation; scattering theory; identical particles; applications.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHYSICS765 - Advanced Quantum Mechanics

Course Description
Concepts of quantum fields and canonical quantization; non-relativistic quantum mechanics in Fock space; Hamiltonians for relativistic particles; Dirac Hamiltonian and spin-half particles; Hamiltonians for lattice vibrations, phonons, and scalar particles; electromagnetic field quantization; gauge symmetry and the Hamiltonian for photons; global symmetries and spontaneous symmetry breaking; interactions of atoms with the electromagnetic field; density matrix; the path integral formulation; entanglement; interacting bosons and superfluidity; interacting fermions and superconductivity; additional possible topics include coherent state path integral methods for bosons and fermions.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS766S - Physics Research Seminar

Course Description
Series of weekly presentations on research projects under investigation in the department. Credit/No credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

PHYSICS771 - Mini-Course on Current Research in Physics

Course Description
One-third semester mini-course covering selected topics of current research in Physics. Topics course.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

PHYSICS772 - Mini-Course on Methods for Physics Research

Course Description
One-third semester mini-course covering selected experimental, computational, and/or theoretical methods used in physics research. Topics course.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

PHYSICS781 - Quantum Field Theory

Course Description
Classical field theory, symmetries and conservation laws, representations of the Lorentz Group, canonical quantization, Feynman diagrams and perturbation theory, elementary quantum electrodynamics, radiative corrections, renormalization. Prerequisite: Physics 464, 465 and 715.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS782 - Advanced Quantum Field Theory

Course Description
Study of a variety of topics in quantum field theory, selected from nonabelian gauge theory, anomalies, instantons, super-symmetry, topological defects, large-N techniques, spontaneous symmetry breaking, effective potentials, and finite temperature methods. Prerequisite: Physics 781.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS805 - Electromagnetic and Weak Interactions in Nuclear Physics

Course Description
Electromagnetic interaction, Compton scattering, electron scattering, parity-violating electron scattering, nucleon structure and three-dimensional tomography, weak interaction, neutrino physics, fundamental symmetry studies and Standard Model tests at low energies, nuclear beta decay, nucleon electric dipole moment, CP-violation. Prerequisites: Physics 505 and 764, or equivalents.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS806 - Radiation Detection

Course Description
Introduction to detection of charged particles, photons and neutrons. Emphasis on active detector techniques: ionization detectors, scintillators and semiconductors; some passive methods mentioned. Quick review of radiation interaction with matter, followed by general detector characteristics, practical measurement techniques, signal processing and brief overview of radiation protection. Prerequisite: Core courses in graduate physics program.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PHYSICS810 - Advanced Solid-State Physics

Course Description
Substantial background in quantum mechanics is assumed, and some familiarity with elementary solid-state physics is helpful. 'Second quantized' notation is discussed early on and then is used extensively, but no field theory or Green function formalism is the focus is on physical phenomena rather than theoretical techniques. Topics discussed: The interacting electron gas - Hartree-Fock, RPA (random-phase-approximation), and an intro to density-functional theory, Linear réponse, plasmons, Landau Fermi liquid theory, superconductivity - phenomenology, BCS theory, Josephson junctions, and Bogoliubov-DeGennes equations, quantum magnetism - Heisenberg model for Mott insulators, Kondo screening.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PHYSICS814 - Introduction to Fluid Mechanics

Course Description
Fundamentals of fluid dynamics. Ideal fluids, viscous fluids, turbulence, boundary layers, heat conduction, relativistic fluids. Prerequisite: Physics 560 and 231.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PHYSICS846 - Topics in Theoretical Physics

Course Description
Topics vary; check Physics Department Web site. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PHYSICS995 - Graduate Training Internship

Course Description
Designed to allow graduate student in Physics to engage in internship lab work and doctoral study with external agencies and institutions for credit, when determined necessary for degree completion. Laboratory work and analysis can be conducted at external institution with permission of immediate faculty supervisor. Permission of instructor required.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

POE790 - Practice Oriented Education

Course Description
Practice Oriented Education

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

POLSCI505S - Race in Comparative Perspective

Course Description
Comparative study of the way race is socially constructed in the United States, several European, Latin American, and other countries. The real effects of this social construction on the social and political lives of communities of color in these countries.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ICS505S RACE IN COMP PERSPECTIVE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (SS) Social Sciences

POLSCI506S - Theorists of Modern Politics: Marx, Durkheim, Weber

Course Description
The course examines the role of politics in modern societies, as seen through the lens of Karl Marx, Emile Durkheim, and Max Weber, three foundational theorists of 20th century social science. The same questions guide the analysis of each author. First, what is the role of politics in the historical development of modern societies? Second, what is the relationship between economy and politics in modern societies? And, third, what are the tensions, crises and 'contradictions' between politics and economics in modern societies that produce conflict and institutional change? Finally, what is their methodological advice to produce good social science?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, SS - (SS) Social Sciences

POLSCI514S - Political Values

Course Description
Why should we prefer democracy to other forms of government? Why should we obey democratic decisions we think conflict with our political values and commitments? What is the best way to answer questions of this sort? Democracy is under assault across the globe. And recent years have witnessed theoretical and philosophical reconsideration of the best arguments for self-rule. This interdisciplinary class will critically examine those works, seeking to understand democracy, its grounds and its rivals. Course has no prerequisites, but previous course work in political theory, philosophy and related subjects will be helpful.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL508S POLITICAL VALUES

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, CZ - (CZ) Civilizations

POLSCI517S - Democratic Institutions

Course Description
How constitution makers choose basic rules of the democratic game, such as the relations between legislatures and executives, the role of parties, electoral system, prerogatives of constitutional courts, and other important elements of democratic institutional design; the impact of such arrangements on various groups within the state, and the overall performance of democracies; durability of arrangements, the structuring of power relations among parties, and whether democratic institutions affect economic and social policy outcomes.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SS - (SS) Social Sciences

POLSCI520S - Congressional Policy-Making

Course Description
Lawmaking and oversight of the executive branch by the U.S. Congress. Committee, party, executive, and interest group roles.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI522S - Comparative Party Politics

Course Description
The concepts, models, and theories employed in the study of political parties in various competitive democracies. Focus on advanced industrial democracies where there is a rich empirically oriented literature on this topic. The resurgence of democracy in developing areas and the role of party competition and democracies in these regions of the world.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI523 - China Science and Technology Policy and Innovation

Course Description
China's technological rise has become one of the most important developments in the 21st century. This course will focus on an analysis of China's science and technology policy and innovation strategy, with emphasis on the 1978-Present period. The course will examine the transition in technological development from a Soviet -style top-down model to one where market forces play a greater role in driving advances in science and technology. We also will analyze China's increasing emphasis on an innovation driven economic model. Prereqs: basic knowledge of Chinese history, politics, economics and/or culture. Some basic knowledge of macroeconomics. Some knowledge of politics in the US and abroad.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES523 CHINA S&T POLICY & INNOVATION, EAS508 CHINA S&T POLICY & INNOVATION, SCISOC508 CHINA S&T POLICY & INNOVATION, PUBPOL512 CHINA S&T POLICY & INNOVATION

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (STS) Sci, Tech, and Society, (SS) Social Sciences

POLSCI524 - National Security Simulation: The Arctic, Climate Change and Great Power Competition

Course Description
Students will participate in a national security simulation in which they will have an assigned role as a state or non-state actor and work with teams to develop policy responses to a security crisis that changes and develops over time. The simulation this semester will involve security issues that arise due to the climate change in the Arctic that has opened up sea lanes and other resources that are generating competition for advantage among multiple nations. Participants will be required to grapple with a complex information environment that is polluted with misinformation, manipulation and deception. Instructional weeks on the substantive security issues the simulation addresses will be interspersed with gameplay. No prior experience in national security is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL517 NAT SEC SIM, DECSCI524 NAT SEC SIM

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

POLSCI525S - Race and American Politics

Course Description
A broad overview of the salience of race in the American political fabric and how it structures racial attitudes on a number of political and policy dimensions.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS544S RACE AND AMERICAN POLITICS, PUBPOL526S RACE AND AMERICAN POLITICS

POLSCI527S - Global Africa

Course Description
Africa's participation in globalization has not simply been a matter of 'joining the world economy.' Rather, Africa's inclusion has been selective, uneven, and partial. This is quite a different proposition than arguing, as many social theorists, economists, and journalists have suggested that the Continent is somehow structurally irrelevant to the process of globalization. This course responds to this debate by retracing the history of globalization, beginning with the Atlantic trade in human beings and concluding with an account of Africa's place in the global circulation of people things, ideas, and currencies in early twenty-first century.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS510S GLOBAL AFRICA, CULANTH561S GLOBAL AFRICA, HISTORY561S GLOBAL AFRICA, ICS510S GLOBAL AFRICA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (SS) Social Sciences

POLSCI528S - Peace and Conflict Processes

Course Description
Understanding the causes of armed conflict, as well as strategies to prevent, manage and resolve it. Course readings from the academic literature. Writing developed in a multi-part assessment of an ongoing conflict that includes simulation of a peace process and a final research paper. Prerequisite: Political Science 160S.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research, (W) Writing, (SS) Social Sciences

POLSCI531 - Economic History and Modernization of the Islamic Middle East

Course Description
Economic development of the Middle East from the rise of Islam to the present. Transformation of the region from an economically advanced area into part of the underdeveloped world. Role of religion in economic successes and failures. Obstacles to development today. Topics: Islamic economic institutions, economic roles of Islamic law, innovation and change, political economy of modernization, interactions with other regions, economic consequences of Islamism. This is the graduate only pairing for Econ 134 which requires additional course work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON556 ECON HIST ISLAMIC MIDDLE EAST

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum

POLSCI536S - Choosing in Groups: Social Choice and Collective Action

Course Description
Survey of problems of social choice and collective action in politics and economics. Representing preferences, indifference, geometric representation of trade-offs. Consideration of Arrow Problem and Olson Problem of Collective Action. Instructor consent required. Prerequisite: Political Science 342 or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research, (QS) Quantitative Studies

POLSCI537S - Transitional Justice

Course Description
Transitional justice is a range of processes responding to human rights violations during armed conflicts, under authoritarian regimes, or in divided societies where a dominant ethnic, racial, or religious group persecutes a marginalized group. It seeks to provide redress for victims and accountability for perpetrators through judicial or non-judicial mechanisms, repair damaged relationships between offenders and victims 'restorative justice', promote peaceful coexistence between previously adversarial groups, truth-telling and memorialization of the historical record of human rights violations, and reforms addressing root causes.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

POLSCI538 - Introduction to Machine Learning and Text as Data

Course Description
This course serves as an introduction to machine learning and natural language processing. The emphasis is on social science applications, text as data, and the connection between theory and empirical work.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DECSCI538 INTRO TO MACHINE LEARNING

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum

POLSCI546S - Assisting Development

Course Description

Examines evolution of international development theory and practice since early 1950s. Investigates how different solutions advanced to deal with poverty have fared. Different streams of academic and policy literature, including economics, political science, and sociology, are consulted with a view to understanding what could have been done in the past and what should be done at the present time. Examines alternative formulations weekly in seminar format. Individual research papers (60% of grade) which analyze past and present development practices in a country of their choice, or examine trends within a particular sector (e.g., agriculture, population, gender relations, the environment).

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PUBPOL515S ASSISTING DEVELOPMENT, ICS514S ASSISTING DEVELOPMENT

General Education Curriculum Codes

R - (R) Research, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI547 - Politics of United States Foreign Policy

Course Description

Focus on politics of U.S. foreign policy: which institutions and actors within the American political system play what roles and have how much influence in making U.S. foreign policy. Fundamental questions about nature and practice of democracy as manifested in politics and policy processes in making US foreign policy. Scope is both historical and contemporary. Approach combines theory and policy analysis. Complements Pub Pol 502S, Contemporary U.S. Foreign Policy, which focuses more on foreign policy strategy.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PUBPOL506 POLITICS OF US FOREIGN POLICY

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, R - (R) Research, SS - (SS) Social Sciences

POLSCI554 - Privacy, Technology and National Security

Course Description

Course explores the impact of new and developing surveillance and data collection technologies on personal privacy and individual liberty. In-depth examination of conceptions of privacy and the extent to which privacy rights are protected by the Constitution, statutory law, and policy. Examines how government surveillance expanded during the post-World War II period, the abuses uncovered by the Church Committee in the 1970s, new expansions of government surveillance powers after 9/11, and the programs revealed by Edward Snowden in 2011. Explores how data collection and analysis by big tech companies impact personal privacy and consider the need for regulation of these companies' activities.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses
ISS554 PRIVACY TECHNOLOGY & NAT SEC, PUBPOL550 PRIVACY TECHNOLOGY & NAT SEC

General Education Curriculum Codes
(EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (SS) Social Sciences

POLSCI558 - Islam and the State

Course Description
Introduction to political history of Middle East. Four objectives: (1) become familiar with institutions responsible for political development in region, (2) examine transformations/cases of inertia to derive lessons about mechanisms that govern political development, including democratization, (3) investigate how religion shaped the region's political trajectory, (4) identify social forces, especially economic, driving contemporary reinterpretation of Islam's political organization and requirements, by both Islamists and secular political actors. Not open to students who have taken Economics 326. Graduate students only. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON558 ISLAM AND THE STATE

POLSCI560S - Political Polarization Research Practicum

Course Description
This course explores the causes, consequences, and potential solutions to political polarization in the United States drawing on interdisciplinary perspectives from political science, sociology, and statistics. Key topics include the role of social media, AI, and political campaigns in driving partisan animosity. The course serves as a hands-on practicum to provide students with the tools and experience to conduct original research about political polarization. Students will develop their skills with research design, data collection, analysis, and academic writing by working on a research project in small teams. Recommended perquisite: Proficiency in R and/or Python Affiliation with the Duke Polarization Lab.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SOCIOL560S POLITICAL POLARIZATION

General Education Curriculum Codes
R - (R) Research, SS - (SS) Social Sciences

POLSCI562S - American Grand Strategy

Course Description
Study of policy that nations adopt to marshal their political, economic, military, technological, and diplomatic resources to achieve their national goals in the international environment they face, drawing on political science, history, public policy, law and political economy and other disciplines to achieve these ends. Course examines the history, current reality, and future prospects of American grand strategy. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY567S AMERICAN GRAND STRATEGY, PUBPOL501S AMERICAN GRAND STRATEGY

POLSCI564S - Intelligence for National Security

Course Description
Addresses complex US intelligence enterprise that has been established to support our national security priorities. First, students review and discuss current structure of national intelligence apparatus. Case studies are used to evaluate effectiveness and design of intelligence agencies and their accompanying capabilities. Finally, students conduct independent research on select intelligence agencies and organizations. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL507S INTEL FOR NATIONAL SECURITY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

POLSCI565S - National Security Decision Making

Course Description
Course explores the delicate art of national security decision-making through deeper understanding of national security apparatus, analysis of elements of national power (examination of historical examples of application), and application of analysis to assess merits of various approaches to national security decision-making.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL505S NATL SECURITY DECISION MAKING

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI566 - Democracy Lab

Course Description
Democracy Lab will involve students in the practice of revitalizing our democracy, on campus, in Durham, and in our nation. Lab-based model will allow students to experiment with solutions, working together in teams to create innovative projects addressing political issues. Course will include instruction on history and reflective writing as well as theories of innovation and leadership. Work will largely consist of client-based projects in which teams will produce a substantial report or the equivalent activity that contributes to the health of political processes. Course offered through the Hart Leadership Program. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL564 DEMOCRACY LAB

General Education Curriculum Codes
SS - (SS) Social Sciences

POLSCI570 - Frankfurt School Critical Theory

Course Description
This course serves as an introduction to the 'Frankfurt School' and Critical Theory with particular emphasis upon rationality, social psychology, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward an understanding of the analyses they developed and consider their validity. All readings and discussions are in English.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN570 FRANKFURT SCHOOL, PHIL572 FRANKFURT SCHOOL, LIT575 FRANKFURT SCHOOL

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations

POLSCI574S - Dissent, Disobedience and Revolution

Course Description
Examines boundaries of democratic practice - including hate speech, protest, and secession. Key topics in democratic theory will be addressed including scholarly debates over free speech, civil disobedience, and justified revolution. Readings include works by Mill, Locke, Waldron, Buchanan, Cristiano, Elster.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI575S - Ancient Political Philosophy

Course Description
Intensive analysis of the political philosophy of Plato, Aristotle, and other ancient theorists. Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST571S ANCIENT POL PHILOSOPHY, PHIL571S ANCIENT POL PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

POLSCI577S - Nietzsche's Political Philosophy

Course Description
Study of the thinker who has, in different incarnations, been characterized as the prophet of nihilism, the destroyer of values, the father of fascism, and the spiritual source of postmodernism. An examination of his philosophy as a whole in order to come to terms with its significance for his thinking about politics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN576S NIETZSCHE'S POLIT PHILOS, PHIL537S NIETZSCHE'S POLIT PHILOS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

POLSCI578S - Contemporary Theories of Democracy

Course Description
Seminar has three aims: (a) to introduce students to some important topics and approaches in contemporary democratic theory; (b) to investigate the ways in which these issues are related to broader discussions about the strengths and weaknesses of democracy and the rule of law; (c) to familiarize students with a range of strategies for justifying or criticizing political arrangements or policies. Topics include social justice, individual rights and community, representation, deliberation, the relationship between democratic decision-making and markets and the normative implications of moral, religious and ideological pluralism.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ETHICS578S THEORIES OF DEMOCRACY

General Education Curriculum Codes
(EI) Ethical Inquiry, (SS) Social Sciences

POLSCI579S - Topics in Early Modern Political Thought from Machiavelli to Mills

Course Description
Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL566S TOPICS EARLY MOD POL THOUGHT

POLSCI582S - Contemporary Ethical Theories

Course Description
The nature and justification of basic ethical concepts in the light of the chief ethical theories of twentieth-century British and American philosophers. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL503S CONTEMP ETHICAL THEORIES

POLSCI585S - Adversarial Ethics

Course Description
Course attempts to identify general principles for designing the rules & regulations for deliberately adversarial institutions (ie; markets, electoral systems/ legislatures, criminal law, warfare, sports). Looks at the special virtues of sportsmanship, professionalism, business ethics, etc. people are expected to follow within these hyper-competitive contexts. By examining ways the criteria for being an ethical businessperson, lawyer, soldier, and so on may differ from the criteria for simply being an 'ethical person', this course seeks to prepare students for future professional roles in these adversarial domains. No formal pre-requisites.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ETHICS510S ADVERSARIAL ETHICS, PHIL510S ADVERSARIAL ETHICS

General Education Curriculum Codes
(EI) Ethical Inquiry, (SS) Social Sciences

POLSCI589S - The Black Radical Tradition

Course Description
Cedric Robinson's 'Black Marxism' (1983) has long been taken as foundational to the Black Radical Tradition and specifically Black people's enduring resistances to racial oppression. For Robinson such resistances have not only been legible as class struggle, but as forms of political, spiritual, artistic, intellectual opposition and underground activism. What his work has left unaddressed is the nature of such resistances in gendered terms and in terms that move beyond the United States. This course attempts to expand the definition of what is 'Black' 'Radical' and a 'Tradition' conjoining histories of struggle in South Africa and the US while attentive to their gendered sensibilities.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS503S THE BLACK RADICAL TRADITION, RELIGION503S THE BLACK RADICAL TRADITION, CULANTH503S THE BLACK RADICAL TRADITION, ICS504S THE BLACK RADICAL TRADITION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

POLSCI599S - Political Economy of Conflict, Development, and Peacebuilding in Africa and the Middle East

Course Description
This course tackles major questions in contemporary research on the political economy of conflict, development, and peacebuilding, with special focus on Africa and the Middle East. It also explores intersectionality between and across these areas. The course will cover major questions related to the sources and drivers of poverty and conflict traps, endogenous forces for peace and development and the role of outside assistance in conflict and processes. It will give students a broad theoretical architecture for thinking critically about the issues facing countries in these regions, with the view to testing abstract theories, using empirics and in-depth knowledge of specific case studies.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, SS - (SS) Social Sciences

POLSCI607S - Modern Public Sphere

Course Description
Covers current theoretical and empirical debates in scholarship concerning contemporary citizens experiences of and participation in politics, with an emphasis on the politics of the United States. Topics include but are not limited to elite communication; digital media; algorithmic curation; misinformation; political polarization; and computational methods. Open to a limited number of undergraduate political science majors with permission of instructor; priority will be given to political science graduate students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, W - (W) Writing, SS - (SS) Social Sciences

POLSCI609L - Fundamentals of Research in the Social Sciences

Course Description
Introduces/reviews the mathematical and conceptual tools underlying most work in quantitative social science. Topics include, but are not limited to: hypothesis testing; using mathematics to structure thinking and analysis; calculus; probability; and linear algebra. Preparation for later methods classes through development of a variety of mathematical skills and an exploration of those skills in the context of social science research.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI630 - Probability and Basic Regression

Course Description

Offers an introduction to empirical methods used in contemporary research in political science. Course develops an applied understanding of the linear regression model in the context of political science research questions. Students will be able to evaluate and interpret allied aggression results as well as develop their own simple models. Required of all incoming graduate students. Open only to Political Science graduate students.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

(QS) Quantitative Studies

POLSCI631L - Introduction to Deductive & Analytical Approaches to Political Phenomena

Course Description

Introduction to deductive and analytical approaches currently used to study political phenomena, with focus on fundamentals of non-cooperative game theory. Students will become good consumers of applied game theoretic research as well as be able to develop some simple game theoretic models of political phenomena. Required of all incoming graduate students.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

R - (R) Research, SS - (SS) Social Sciences

POLSCI633S - Positive Political Theory

Course Description

Introduction to generating hypotheses and building theory in political science. Focus on general principles of deductive and computational modeling, how theoretical models connect to empirical tests, and several of the main schools of theoretical modeling in political science including game theory and social choice. Course is expected to be taken simultaneously with Political Science 748. Open only to Political Science graduate students.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI634 - Social Networks and Political Interdependence

Course Description

Theory of and empirical support for importance of networks and interdependent behavior in political and social processes. Methodology covered includes tools for empirical analysis of relational data as well as game theoretic and computational/behavioral modeling approaches to analyzing role of network structure. Substantive ties to literatures in political science, economics, and sociology.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research, (QS) Quantitative Studies, (SS) Social Sciences

POLSCI635 - Survey Methodology Practicum

Course Description
Surveys and polls provide much of the data we use to understand the world around us. The course is both a reading course on survey methods and a practicum on survey design, teaching students the skills necessary to implement, use, and interpret survey data. By the end of the course, students should be able to critically assess the quality of survey data, as well as be able to design and conduct an original survey. Prerequisite: Statistical Science 101L or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, QS - (QS) Quantitative Studies, SS - (SS) Social Sciences

POLSCI642 - Global Inequality Research

Course Description
Engagement of vertically integrated research teams in projects exploring racial and ethnic disparities exhibited and expressed in six arenas: employment, wealth, health, political participation, education, and arts and culture. Each team will produce a major paper that will qualify for submission to a refereed journal in the area relevant to the focus of the study.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS642 GLOBAL INEQUALITY RESEARCH, ECON541 GLOBAL INEQUALITY RESEARCH, SOCIOL642 GLOBAL INEQUALITY RESEARCH, PUBPOL645 GLOBAL INEQUALITY RESEARCH, RIGHTS642 GLOBAL INEQUALITY RESEARCH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SS - (SS) Social Sciences

POLSCI643 - Applied Bayesian Modeling

Course Description
This course covers the theoretical and applied foundations of Bayesian statistical analysis. It introduces the logic of Bayesian inference, the idea of regularization, the role of subjective priors, the likelihood, and the posterior distribution. We will discuss model checking and model comparison. Applied Bayesian models include Hierarchical models, factor analysis and item response theory models, treatment effect models, and generalized additive models. Throughout the course, we will focus on the flexible modeling of data arising in social/political science, as well as in public health. We will also pay close attention to the presentation and interpretation of substantive results.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QS - (QS) Quantitative Studies

POLSCI644S - The Political Economy of Inequality

Course Description
Study of the concept and measurement of inequality; evolution of inequality across concepts, space, time (developed and developing world); what explains this evolution; and political consequences of inequality.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI650S - Political Economy of International Relations

Course Description
Provides an intensive investigation of the major political-economic actors and their interactions in the modern world economy: states, multinational enterprises, and international institutions. Serves as capstone experience for undergraduate students who are pursuing Political Economy or Security, Peace and Conflict as concentrations in political science, or who are pursuing a certificate in Markets and Management. Designed to help graduate students prepare for the qualifying exam in Security, Peace and Conflict and in Political Economy, and to provide them with an opportunity to conduct sustained research in these two fields.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI652S - Repression and State Violence

Course Description
This course engages with research on state-sanctioned violence against individuals and groups. Topics covered include the relationship between repression, state violence, and political order; the perceived (il)legitimacy of different types of state violence; logics and effects of state-sanctioned violence against different segments of civilian populations in times of war and peace; patterns of human rights violations around the globe; repression in democratic and autocratic regimes; mass killings; disappearances; police violence; mass incarceration; the war on drugs; the implications of new information and communication technologies for repressive practices and surveillance.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (R) Research, (CZ) Civilizations, (SS) Social Sciences

POLSCI658S - Political Economy of Terrorism

Course Description
Seminar in the formal, quantitative study of subnational terrorism. Addresses historical terror examples, aggregate and individual determinants of terrorism, mobilization and terror networks, methods of terror and counter-terror and their consequences, organization of and competition between terror groups. Focuses on unsolved problems and opportunities for research.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(SS) Social Sciences

POLSCI659S - Civil Wars

Course Description
In-depth examination of internal armed conflict. Exploration of micro and macro level approaches to causes of civil wars; types of civil wars; ethnicity and conflict; warfare; repertoires and dynamics of violence in conflict; armed group organizations and their tactics; relationship between armed groups and the state; duration and termination of internal conflicts; consequences of conflict and processes of transitional justice after conflict termination. Overview of both classical and more recent works on these topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (R) Research, (SS) Social Sciences

POLSCI667S - American Civil-Military Relations

Course Description
Theory and practice of relations between the military, society, and the state in the US. Special attention paid to how civil-military relations play out in the use of force. Other topics include: public opinion, casualty sensitivity, and the role of the military in partisan politics. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL667S AMER CIVIL-MILITARY RELATIONS

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI668S - Theory and Practice of International Security

Course Description
Analysis and criticism of the recent theoretical, empirical, statistical, and case study literature on international security. This course examines promising areas of current and future political science research in security studies. Topics include: dynamics of international conflict; alternatives to the use of force; and domestic politics of international security. Aimed at graduate students but open to undergraduates.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

POLSCI670S - Contemporary United States Foreign Policy

Course Description
Focus on challenges and opportunities for American foreign policy in this global age including the impact of interests, ideals and values. Draws on both the scholarly literature and policy analyses. Addresses big picture questions about America's role in the world as well as major current foreign policy issues that raise considerations of power, security, prosperity and ethics. Open to undergraduates with permission of instructor and priority to Public Policy Studies and Political Science majors, and to graduate students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL502S CONTEMPORARY US FOREIGN POLICY

POLSCI672 - Experiments: Design and Analysis

Course Description
This course focuses on the experimental method in social sciences, specifically the design, implementation and analysis of experiments. The course introduces concepts like potential outcomes, types of random assignment, identification assumptions like excludability and non-interference, estimation of effects and hypothesis testing, use of covariates for blocking or to gain precision and validate design, how to deal with issues of non-compliance, attrition and spillovers, what to make of experimental results (generalizability), and the ethics of fieldwork (informed consent, mutually valuable partnerships). The course is designed for graduate students conducting experiments, practitioners interested in RCT-based evaluations, and advanced undergraduates with interests in impact evaluation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, SB - (SB) Social & Behavioral Analysis: A&S Curriculum

POLSCI676S - Hegel's Political Philosophy

Course Description
Within context of Hegel's total philosophy, an examination of his understanding of phenomenology and the phenomenological basis of political institutions and his understanding of Greek and Christian political life. Selections from Phenomenology, Philosophy of History, and Philosophy of Right. Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL536S HEGEL'S POL PHILOSOPHY, GERMAN575S HEGEL'S POL PHILOSOPHY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, SS - (SS) Social Sciences

POLSCI681S - Law and Philosophy

Course Description
Seminar will engage in an investigation of the concept of law. Employ both historical and conceptual analyses of several texts, both classic and contemporary. Topics include: the nature and legitimacy of law; the relationship between law and morality; the relationship between law and politics and the concept of the rule of law.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

POLSCI683S - Theology and Political Philosophy

Course Description
Course will examine the transformation of theology and political philosophy in the period between Aquinas and Dante until Montaigne and Bacon. Understanding the changes in thinking about God, man, and the natural world during this period is essential to understanding modernity. While a knowledge of Christianity is essential in this enterprise, we obviously cannot cover all of the earlier Christian material in even the most rudimentary way in the course of the semester, we will look at some that is essential.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum

POLSCI684S - Republicanism

Course Description
Study of the republican political theory and its historical tradition. Emphasis on key concepts of this tradition, including freedom as non-domination, virtue, the mixed constitution and the common good. Study and comparison of the Roman Republic, English, American, Italian and French republican trends. Readings include Cicero, Machiavelli, Milton, Montesquieu, Rousseau, Arendt and contemporary neo-republican scholarship.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

POLSCI685S - Social Contract Theory

Course Description
Course investigates the use of social contract as a device to legitimize specific forms of social and political organization. Explores the origins of the social contract tradition, its most influential iterations in early modern philosophy and its revival in contemporary philosophy. Will study the role of social contract theory in the rise of liberalism, the question of the legitimacy of the state and the right to resistance. Course will also ask about the limits and exclusions intrinsic to the social contract as it has developed historically.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry, (SS) Social Sciences

POLSCI686S - Injustice, Domination and Exploitation

Course Description
What is injustice? Why is it wrong if one group dominates another? How does exploitation work? Is imperialism wrong, necessarily? Recent years have witnessed a surge of theoretical and philosophical inquiry into the nature and forms of injustice including misogyny, racism and economic exploitation. Will read and discuss works by a diverse range of authors like Tommie Shelby, Kate Manne and Miranda Fricker. Will encounter classic works on the nature of justice by authors like John Rawls. Course has no prerequisites, but previous course work in political theory, philosophy and related subjects may be helpful.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

POLSCI687S - Classics of Political Economy

Course Description
This course focuses on the origins and development of political economy as a modern scientific discourse about society. It aims to uncover and question the normative commitments, theoretical assumptions, and arguments made by the thinkers who came to consider themselves 'economists.' We will examine the evolution of major concepts of economic thought —commerce, luxury, market, interest, value, price, property, labor—in their relation to social and political thought. We will retrace the development of liberalism, capitalism, socialism and regulation theory. Readings include Colbert, Mandeville, Hume, Quesnay, Smith, Sismondi, Ricardo, Marx, Luxemburg, Keynes, DuBois, Schumpeter, Piketty.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, R - (R) Research, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

POLSCI701 - Core in Political Behavior and Identity

Course Description
Formation of public opinion in terms of preferences and demands mass publics might direct toward political authorities; the cognitive attribution of causal agency to politicians and collective entities in the political process, as well as the assessment of results of that process; the collectivities that actors identify with as members or the boundaries they draw between their own and other actors' collective memberships/identities, including their affective bases; and the attribution of value and 'legitimacy' to political institutions, processes, and entire regimes. Major methods of research to which students are exposed are surveys, experimentation, and qualitative research.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI702 - Political Psychology (A)

Course Description
Examination of the human political situation through the study of actual problems and solutions at the level of: (1) the individual, (2) political discourse among government officials, (3) public discourse in the media.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PSY717 POLITICAL PSYCHOLOGY

POLSCI703S - Racial and Ethnic Minorities in American Politics

Course Description
Graduate-level course on politics of the United States' four principal racial minority groups Blacks, Latinos, American Indians, and Asian Americans. Importance of race and ethnicity in American politics is also explored.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS740S RACIAL/ETH MINORITIES AMER POL, PUBPOL845S RACIAL/ETH MINORITIES AMER POL

POLSCI704 - Survey Methodology Practicum

Course Description
Course will serve as an introduction to methodologies for measuring public opinion, with a primary focus on survey research methods including survey experiments.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI706S - Political Judgment and Decision Making

Course Description
Course explores how people in democratic societies make politically-relevant judgments and how they choose among political alternatives. Topics include: heuristics and biases, impression formation and candidate assessment, forecasting and risk assessment, judgments of fact and misinformation, moral judgment, decision making under risk and uncertainty, compensatory and non-compensatory decision rules, and spatial, heuristic, and expressive voting models.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI707A - Marine Policy (A)

Course Description
Formal study of policy and policy-making concerning the coastal marine environment. History of specific marine-related organizations, legislation, and issues and their effects on local, regional, national, and international arenas. Topics explored through use of theoretical and methodological perspectives, including political science, sociology, and economics. Consent of instructor required. Taught in Beaufort at Duke Marine Lab.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON786A MARINE POLICY, PUBPOL849A MARINE POLICY

POLSCI708 - Democracy and the Rule of Law

Course Description
Course provides an overview of the normative and positive issues associated with modern democracies and their legal systems.

Grading Basis
Graded

Units

Min Units:
2

Max Units:
2

POLSCI711S - Politics, Groups, and Identities

Course Description
Course offers an introduction to the concepts of groups and identities and their study in political psychology, sociology, and social psychology. Consider how theories from these different disciplines apply to different identities, including racial, ethnic, national and religious identities. Explore how groups and identities develop, and consider how they have been instrumental in politics not only at the individual level, but also how they have been implicated in social movements. Examines how identities are a lens through which individuals view the social and political world and how groups and identities foster conflict or cooperation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI712S - Values and Ideology

Course Description
Examines the political preferences of the public through in-depth examination of the concepts of 'values' and 'ideology'. Topics include: structure of mass belief systems; core human values and core political values, their nature and origins, and their use in political judgment; nature and meaning of ideological self-identifications; origins of mass ideology in biological and psychological processes; ideology and its dynamics over time at the aggregate level; and relationship of ideology to institutional legitimacy.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI715 - Core in Political Institutions

Course Description
Studies the formal and informal rules, practices, and regularities at both the domestic and international level that guide and constrain political choices and activities. It is concerned with the emergence, dynamics, and consequences of institutions in both authoritarian and non-authoritarian regimes. Focus includes constitutional design and how the organization of legislatures, parties, judiciaries, markets and other social structures shape relationships between individuals and states, and in turn, the factors shaping the emergence and evolution of those institutions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI716 - The New Institutionalism in Political Science (C-E)

Course Description
Survey of recent developments in information economics, theory of the firm, the property rights paradigm, and contract theory. Emphasis on using these techniques to answer classic questions in political science.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI718 - Core Course in American Politics (BI, PI)

Course Description
Introduction to fundamental research and theoretic statements in American politics.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI719S - Comparative Constitutional Design

Course Description
Consideration of configurations of political institutions apt for democratizing countries, especially those divided by ethnic or religious affiliations. Begins with theories of constitutional and legal change and of efficacy of constitutions as instruments of conflict management, as well as alternative approaches. Specific issues include: electoral systems; federalism and regional devolution; the presidential-parliamentary debate; costs and benefits of judicial review; the special issue of Islam and the state. Extensive discussion of the overarching question of adoptability and emphasis on the relations between processes of constitutional change and the content of the institutions adopted.

Grading Basis
GRD - Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
LAW717 COMP CONSTITUTIONAL DESIGN

POLSCI720S - Capitalism

Course Description
This course introduces students to some of the debates relating to the current financial crisis—both within and beyond the field of finance itself. Combining media accounts with scholarly critiques of the current structures for money making, this course is primarily committed to theorizing the culture of capitalism in the early 21st Century. The larger inter-disciplinary framework for the course encompasses inter-related fields of inquiry including anthropology, cultural geography, and political economy.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH716S CAPITALISM, SOCIOL716S CAPITALISM

POLSCI721 - Authoritarian Institutions

Course Description
Course will survey the exciting new work on the variation, causes, and effects of institutional configurations in authoritarian regimes. Coverage of different regimes types including analysis of particular institutions: party systems and structure; parliaments; elections and electoral systems; local governments and modes of decentralization; and courts and judicial independence.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI722 - Election Law

Course Description
Examination of the legal issues that arise during the course of local, state, and federal political campaigns and on election day, plus related areas. Subject matter areas addressed in the general order faced by, and from the perspective of, a typical campaign. Topics include precandidacy activities, campaign finance laws, Federal Elections Commission and state boards of election, regulation of paid political advertisements, defamation, interaction with other political interest groups (for example, parties, PACs, and independent expenditures), enfranchisement and registration, election day issues, challenging voting results, and redistricting.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI725S - Research on Chinese Politics: Forefront and Foundations

Course Description
Systematic study of new, cutting-edge scholarship on contemporary Chinese politics: research questions, methods, contributions to substantive knowledge. Assessment of how and how much cumulativeness achieved; consideration of fit into broader literature on authoritarianism; scrutiny into relevance of dominant concepts, questions, methods from previous decades. Topics include political selection, representation and responsiveness, elite politics, decentralization, information management. Graduate status, familiarity with multivariate statistical methods required. Foundation in more sophisticated statistical methods and prior knowledge about China helpful but not required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI727S - Monitoring, Evaluation, and Learning for Development (MELD) Seminar

Course Description
This seminar is focused on the real world of international development monitoring, evaluation, and learning (MEL). This is an applied course that covers the landscape of international development funding and research organizations. In addition to the actors involved in international development MEL, this seminar covers 'getting the work' (responding to a solicitation for MEL activities), as well as 'doing the work' (design and implementation of selected international development MEL projects). Because the topics covered are very broad, this seminar provides a high-level overview of the international development MEL landscape, and does not focus on the details of specific evaluation methods.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON747S MELD SEMINAR

POLSCI730 - Formal Modeling in Political Science (C-E)

Course Description
Introduction to formal analysis of recent work in political science. Focus on a number of important theorems and their proofs drawn from such areas as bargaining, deterrence, public goods, collective choice, electoral politics, and new institutionalism. Students will in the process be expected to begin work on formal proofs of their own. Prerequisite: one course in game theory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI731 - Scope and Methods in Political Science (C-E)

Course Description
Designed to explore philosophical assumptions in political science, theory, and matters of evidence and judgment, the course is meant to be an introduction to variations in research design, empirical methods, and the execution of research.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI732 - Developing a Clear Thesis Project

Course Description
This class has two goals: First, to take your nascent prelim papers/dissertation idea and turn it into a very clear project; second, to use some readings and discussion on key topics in research design to service the development of your project. Thus, the class will be highly participatory and rely on many presentations by you. Each student presents three papers of increasing length on their research topic. These presentations start early in the semester, so you need to enter the class with a moderately clear research question. This is not a class for students in search of an idea and who want to investigate a broad array of potential methodologies to inform their future research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POLSCI733 - Advanced Regression

Course Description
Theory and practice of likelihood inference for social science models, spanning binary, nominal, ordinal, count, and continuous random variables. Estimation, interpretation, and presentation of results will also be emphasized. Content may vary by year.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI745 - Core in Political Economy (PE)

Course Description
Survey of techniques and substantive work in the field. Political economy uses the tools of modern economics and game theory to address questions of fundamental importance at the national and international level. Analyze the aggregate impact of trade, policies of redistribution, regulations, and assignment of property rights. Study of the 'micro,' including incentives and individual choice, and the 'macro,' representing the conflict of social interests and aggregate consequences of individual choices.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI748 - Causal Inference

Course Description
Theory and practice of causal inference in the social sciences, introduces basic concepts, such as counterfactuals and identification. Introduces the formal frameworks of potential outcomes and graphical models (DAGs). Covers experiments (in the lab and the field), and various regression-based approaches. Department consent required. Open only to Political Science graduate students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI749S - Advanced Game Theory

Course Description
Course has two primary aims: 1) better understanding of the technical modeling literature and 2) enhanced ability to write models. Will be exposed to array of different theoretical modeling choices, from signaling and bargaining games to agency problems to behavioral models and computational methods.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI750S - Political Economy of Development

Course Description
Course provides an overview of advanced contemporary research on the political economy of development. Students will work through growth models and attempt to map them onto broader debates in the political economy of development - debates surrounding the impact of institutions, historical legacies, inequality, natural resources, trade, ethnic heterogeneity, foreign aid and the like on prospects for economic development. Extensive use of field and natural-experiments to identify the key instruments of development.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI752 - What Machiavelli Really Says

Course Description
Everyone knows what 'Machiavellian' means, but what does Machiavelli really say? Reading his classical political texts 'The Prince,' the 'Discourses on Livy,' and 'The Art of War' in the company of his literary works, including 'Mandragola,' we will examine how Machiavelli's ideas about power, deception, language, ethics, and representation emerged from his reading of Plato, Livy, Ovid, and Dante, while also exploring the reception and consequences of his ideas. Just as Machiavelli searched history for answers to his own political situation, our guiding question cannot help but be 'What would Machiavelli do?'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY743 WHAT MACHIAVELLI REALLY SAYS, ITALIAN743 WHAT MACHIAVELLI REALLY SAYS, LIT743 WHAT MACHIAVELLI REALLY SAYS

POLSCI758 - Workshop in Political Economy I

Course Description
Research workshop in political economy. Content of the workshop continues in Political Science 759.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

POLSCI760S - Core in Security, Peace and Conflict (SP)

Course Description
Critical survey of theories and research in security and conflict at the international, transnational, and subnational levels. Emphasis will be placed on the interrelation between theory and research.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI762 - The Political Economy of Institutions

Course Description
Provides survey of institutional analysis, focusing on recent developments in economics, political science and legal studies. Emphasis on analysis of institutional change and functions of institutions. Explores mechanisms by which constitutions, laws, customs and conventions undergo transformations. Topics include pace of institutional transformation, latent change, social inertia, political revolutions, links between beliefs/behaviors, and social functions of laws, customs and conventions. Readings and case studies reflect the interdisciplinary characteristic of field. Prerequisite or Corequisite: Economics 701D or Economics 601D or instructor consent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON751 POLITICAL ECONOMY INSTITUTIONS

POLSCI763S - Foundational Scholarship in International Relations

Course Description
Seminar producing firm grounding for graduate students in several key research programs in the field of International Relations. Examination of foundational books and, in some instances, articles, and follow-on works, representing core elements in International Relations, including international structuralism (realist and liberal), the impact of domestic institutions and world politics, the role individual group psychology in foreign policy, and recent IR work employing constructivist international theory. Students will write essays on each research tradition with the goal of identifying plausible questions they could pursue in larger research papers.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI764S - Political Economy of Corruption and Good Governance

Course Description
Seminar focuses on corruption—the abuse of public power for private gain—as a generic research question and practical policy problem. Reviews the theoretical and empirical analyses by economists, political scientists, and policy analysts that attempt to sort out systematically corruption's underlying causes, global distribution, and consequences for growth, investment, government expenditure, income distribution, and regime support. Examines what the literature implies about the desirability and prospects for success and prescriptions, if any, for hurrying good governance along. Open only to graduate students in political science.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POLSCI780T - Applied Sociology Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on sociological contexts and methods. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, databases, white papers, data visualizations). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SOCIOL780T APPLIED SOCIOLOGY RESEARCH

POLSCI781T - Applied Sociology Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on sociological contexts and methods. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, databases, white papers, data visualizations). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SOCIOL781T APPLIED SOCIOLOGY RESEARCH

POLSCI790S - Seminar for Teaching Politics Certificate Program

Course Description
This course focuses on the problems and special techniques of teaching courses in political science. It meets as a weekly seminar, and brings in faculty from the department to add their perspectives on syllabus design, the large lecture, leading discussions, teaching writing through long papers and short memos, guarding against plagiarism, and other topics.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

POLSCI791S - Thesis Writing in Political Science

Course Description
Provides an overview of the major sections of a research paper, including the introductory frame, literature review, theoretical argument, research design, discussion of the results, and conclusion. Students will read model examples, discuss best practices, practice writing each type of section, and receive feedback from the instructor. Required for MA students on the thesis track, and counts as three of the six ungraded credits needed for completion of the thesis track. Elective for PhD students.

Grading Basis
No Grade Associated

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POLSCI797S - Research Seminar in Political Science II

Course Description
Consideration of various elements involved in the conduct of research, including identifying topics for study, theory construction and application, gathering and marshaling evidence, and framing and presenting analysis. Ideas will be applied in collaborative research. Students must complete Political Science 796S before taking this course. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POLSCI798 - Individual Research (A,B,C,D)

Course Description
Students will conduct research designed to evaluate hypotheses of their choice. Reports on the research must be presented in appropriate professional style. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI899 - Internship

Course Description
Open to students engaging in practical or governmental work (part-time or full-time) experience during the summer or a regular semester. A faculty member in the department will supervise a program of study related to the work experience, including a substantive paper on a political science-related topic, maintaining significant analysis and interpretation. Consent of director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

POLSCI590-1 - Intermediate Topics in Political Theory

Course Description
Intermediate topics in political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590-2 - Intermediate Topics in Political Institutions

Course Description
Intermediate topics in political institutions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI590-3 - Intermediate Topics in Security, Peace, and Conflict

Course Description
Intermediate topics in security, peace, and conflict.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590-4 - Intermediate Topics in Behavior and Identities

Course Description
Intermediate topics in behavior and identities.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590-5 - Intermediate Topics in Political Methodology

Course Description
Intermediate topics in political methodology.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590-6 - Intermediate Topics in Political Economy

Course Description
Intermediate topics in political economy.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590S-2 - Intermediate Topics in Political Institutions

Course Description
Intermediate topics in political institutions taught in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590S-3 - Intermediate Topics in Security, Peace and Conflict

Course Description
Intermediate topics in security, peace, and conflict taught in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590S-4 - Intermediate Topics in Behavior and Identities

Course Description
Intermediate topics in behavior and identities taught in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590S-5 - Intermediate Topics in Political Methodology

Course Description
Intermediate topics in political methodology taught in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI590S-6 - Intermediate Topics in Political Economy

Course Description
Intermediate topics in political economy taught in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690-1 - Advanced Topics in Political Theory

Course Description
Advanced topics in political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690-2 - Advanced Topics in Political Institutions

Course Description
Advanced topics in political institutions.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690-3 - Advanced Topics in Security, Peace and Conflict

Course Description
Advanced topics in security, peace and conflict.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690-5 - Advanced Topics in Political Methodology

Course Description
Advanced topics in political methodology.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690-6 - Advanced Topics in Political Economy

Course Description
Advanced topics in political economy.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690S-1 - Advanced Topics in Political Theory

Course Description
Advanced topics in political theory. Same as Political Science 690-1 except in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690S-2 - Advanced Topics in Political Institutions

Course Description
Advanced topics in political institutions. Same as Political Science 690-2 except in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690S-3 - Advanced Topics in Security, Peace and Conflict

Course Description
Advanced topics in security, peace and conflict. Same as Political Science 690-3 except in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690S-4 - Advanced Topics in Political Behavior and Identities

Course Description
Advanced topics in political behavior and identities. Same as Political Science 690-4 except in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI690S-5 - Advanced Topics in Political Methodology

Course Description
Advanced topics in political methodology. Same as Political Science 690-5 except in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

POLSCI690S-6 - Advanced Topics in Political Economy

Course Description
Advanced topics in political economy. Same as Political Science 690-6 except in seminar format.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POLSCI890-1 - Political Theory

Course Description
Political Theory

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI890-2 - Political Institutions

Course Description
Political Institutions

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI890-3 - Security, Peace and Conflict

Course Description
Security, Peace and Conflict

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI890-4 - Political Behavior and Identities

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI890-5 - Political Methodology

Course Description
Topics on political methodology.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI890-6 - Political Economy

Course Description
Topics on Political Economy.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

POLSCI890S-14 - Research Seminar in Cultural History

Course Description
Students develop a research project in cultural history. Common readings include a series of methodological works in history, literary theory, and cultural anthropology. The focus of the class is the student's independent work that is to result in a research paper the equivalent in scope and length of a research based journal article.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY890S-14 RESEARCH SEM IN CULTURAL HIS

POPHS701 - Applied Analytic Methods for Population Health Sciences I

Course Description
This is an introductory course in statistical analysis and inference methods useful for Population Health Sciences. Topics include descriptive statistics, analysis of contingency tables, one- and two-way analysis of variance, simple linear regression, measures of uncertainty, and hypothesis testing. Both parametric and nonparametric techniques are explored. Core concepts are taught through team-based case studies and analysis of research datasets taken from the population health sciences literature and demonstrated in concert with Population Health Sciences 703. Computational exercises will primarily use the SAS Statistical Computing Platform.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS702 - Applied Analytic Methods for Population Health Sciences II

Course Description
This course is the second course in a two-course sequence that provides students a foundation in methods for analyzing clinical, health and economic outcomes often encountered in population health studies. Through course readings, in-class discussions, and data analysis, students will develop research skills and competencies related to understanding, conducting and interpreting regression analyses. Prerequisite: Population Health Sciences 701 and 703.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS703 - Introduction to Statistical Programming for Population Health Sciences I

Course Description
Introduction to statistical software packages (i.e., SAS Software System, R Statistical Computing Platform) to provide an introduction to the core ideas of programming including data preparation, input/output, debugging, and strategies for program design. Students will learn to write code to perform descriptive, statistical, and graphical analyses, and write maintainable code, to test for correctness and to apply basic principles of reproducibility. Programming techniques and their applications will be closely connected with the methods and examples presented in the concurrent course Population Health Sciences 701. This course assumes minimal programming knowledge.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

POPHS704 - Introduction to Statistical Programming for Population Health Sciences II

Course Description
Students will build on programming learned in Population Health Sciences 703 using the SAS Software System and R Statistical Computing Platform. Students will continue to learn to write code to perform descriptive, statistical, and graphical analyses; write maintainable code to test for correctness and to apply basic principles of reproducibility. Programming techniques and their applications will be closely connected with the methods and examples presented in the concurrent course Population Health Sciences 702. Prerequisite: Population Health Sciences 703.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

POPHS705 - Topics in Population Health Sciences I

Course Description
This course is designed to introduce students to the transdisciplinary field of population health sciences and provide students with a greater understanding of the general theories, concepts, and measures often used in population health sciences.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS706 - Topics in Population Health Sciences II

Course Description
This course introduces the key components of the US health-care system—the organization, financing, and delivery of services; the role of prevention and other non-medical factors in population health outcomes; key management and policy issues in contemporary US health care. These components are one of the foundations from which we can understand contemporary challenges and questions to address within population health. Topics include the overall structure of the US health-care system, financing (insurance and payment models), health system and providers, the Affordable Care Act, mental health, health economics, and quality of care. Prerequisite: Population Health Sciences 705.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS707 - Population Health Sciences Research Design and Study Methods I

Course Description
This is the first in a two-course sequence that gives students a strong foundation in population health research methods. The course introduces critical concepts in research methods, including varying types of validity, reliability, and causal inference. Topics include sampling and interpretation of probability and nonprobability sampling; an introduction to measurement theory; threats to internal validity; experimental designs; and quasi-experimental designs.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS708 - Population Health Sciences Research Design and Study Methods II

Course Description
This is the second in a two-course sequence where students establish a strong foundation in population health research methodology, including randomized and non-randomized study design. Prerequisite: Population Health Sciences 707.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS709 - Population Health Sciences Professional Development I

Course Description
This multi-semester course gives students a holistic view of their career choices and how to develop the tools they'll need to succeed professionally. The fall semester focuses on creating a strong professional presence, proper networking techniques, American employer expectations, creating and maintaining a professional digital presence, and learning how to conduct and succeed at informational interviews.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

POPHS710 - Population Health Sciences Professional Development II

Course Description
This is the second of two-semester course sequence, continuing Population Health Sciences 709, and teaches project and team management. Prerequisite: Population Health Sciences 709.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

POPHS751 - Population Health Capstone

Course Description
The first of the two-semester capstone sequence, in this course students will develop an interdisciplinary project to identify, analyze, and implement tangible solutions for a specific Population Health issue. Guided by a faculty advisor, each student will complete the course through independent study. Open only to students in the Population Health Sciences Program.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS752 - Population Health Capstone

Course Description
The second of the two-semester capstone sequence, in this course students will develop and produce an interdisciplinary project to identify, analyze, and implement tangible solutions for a specific Population Health issue. Guided by a faculty advisor, each student will complete the course through independent study. Open to graduate Population Health Science students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS775 - Population Health Independent Study

Course Description
Individual research in the field of Population Health Sciences, under the supervision of a faculty member, the major product of which is a substantive paper containing analysis and interpretation of a previously approved topic. Requires approval of the Director of Graduate Studies.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POPHS811 - Pragmatic Health Policy Analysis

Course Description
Course provides a general (and highly accelerated) overview of the local and national policy-making process and the substance of major public policy challenges (with a focus on US domestic health and welfare policy). It exposes students to the conceptual and analytical perspectives necessary for understanding and influencing the policy-making process. This course will illuminate policy, technical, and normative challenges in areas such as health care, human services, and public health. Students will be able to evaluate challenges facing policy-makers and address key technical, political, and resource constraints to adopting evidence-based policies.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS812 - Quality of Care/Population Health Services

Course Description
The goal of enhancing the quality of care and services provided by healthcare and community organizations is at the heart of much of the practice, evaluation, and research in population health sciences. This course focuses on defining quality goals, determining measures of quality, developing a plan of how to improve the quality and summarizing the impact of quality efforts.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POPHS813 - Population Health Implementation Science

Course Description
This course introduces key concepts and definitions, theoretical frameworks, and methods considerations for translating evidence-based policies, practices, and interventions into healthcare contexts. The course also examines the methods for conducting and evaluating rigorous research on implementation.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS815 - Health Services Research

Course Description
Health Services Research provides an overview of methods for undertaking research and program evaluation within health services organizations and systems. In addition to methods, the course also provides 'the state of the art' in research and evaluation through the review of major completed studies. This course is recommended for students who will be carrying out policy research, social science research, or program impact evaluation within health delivery systems as well as developing and implementing programs to improve healthcare outcomes.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS816 - Data for Population Health

Course Description
This course will provide an introduction to multiple different types of data, including national surveys, electronic health records, health insurance claims, and others-all relevant to Population Health. Additionally, the course addresses issues such as data provenance, data linkage, governance, and ethics.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

POPHS818L - Fundamentals of Qualitative Research Data Collection and Analysis

Course Description
This introductory course prepares learners students for implementing and analyzing qualitative descriptive research studies. Learners students will participate in in-class practice activities to gain competency in 1) coordinating qualitative studies, 2) collecting qualitative data, conducting qualitative interviews, 3) managing study data, and 4) conducting applied thematic qualitative analysis.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS820 - Pharmacoepidemiology and Population Health

Course Description
This course will introduce students to pharmacoepidemiology, defined as the application of epidemiological methods to study the use, safety and effectiveness of medication in populations. Students will learn to define and describe medication use, and safety and effectiveness outcomes using real-world data, as well as analytic and design approaches to recognize, quantify and reduce bias. This course will integrate a population health perspective, focusing on how pharmacoepidemiology evidence can inform equitable policy, regulatory and clinical decision making and the intersection of pharmacepidemiology with pragmatic trial design, implementation science, and patient centered research methods.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

POPHS890 - Minicourse in Advanced Population Health Topics

Course Description
Advanced course on topics in population health sciences. Topics vary from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

POPHS895 - Population Health Internship

Course Description
Student gains practical experience by taking an internship in industry/government. Requires prior consent from the student's advisor and from the Director of Graduate Studies. May be repeated with consent of the advisor and the Director of Graduate Studies. Credit/no credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

POPHS901 - Population Health Science Theories

Course Description
This course will introduce students to selected theories in population health sciences and rigorous application of theories to explain and improve the health of populations.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS903 - Analytic Methods for Population Health Sciences III

Course Description
In this course we will study the econometric tools which are used to support causal inference and apply these tools to real world data and draw causal conclusions based on those data. At the end of this course, students will be able to apply modern econometric methods to population health and health policy questions and to evaluate the approach and conclusions of econometric studies. Methods will address analyzing non-linear regression models and longitudinal and panel data.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS904 - Analytic Methods IV: Non-randomized Designs

Course Description
This course is the second in a 2-semester series covering non-randomized study designs that rely on advanced regression models. Students will learn how to use non-randomized designs, such as difference-in-differences, to support causal inference. Students will use statistical software to estimate and interpret regression-based treatment effects. The course will culminate in a term paper where students will independently use observational data to address a research question. At the end of this course, students will understand key assumptions, strengths, and limitations of non-randomized designs and apply these tools to answer population health research questions. Recommended prerequisite: POPHS 903.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS905 - Pop. Health Research Design and Systematic Literature Reviews

Course Description
This course explores the nature and process of scientific inquiry in the field of population health. Specifically, the course will establish a foundation for methodically identifying, exploring, and evaluating literature relevant to students' areas of research interest. Reserved for Population Health Science PhD students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS907 - Professional Development I

Course Description
This multi-semester course gives PhD students a holistic view of their career choices, including preparing for academic and other job markets. We will address preparing scholarly presentations and publications, the peer review process, resources to support dissertation research, and developing other tools to succeed professionally.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

POPHS910 - Fundamentals of Qualitative Research Design, Leadership, and Dissemination

Course Description
This course prepares learners to serve as a principal investigator of qualitative research studies. Learners will gain competency in 1) designing qualitative descriptive research studies; 2) providing oversight to research staff during data collection and analysis, and 3) writing up study findings for peer-reviewed publications and participant summaries.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS912 - Population Health Professional Development

Course Description
This course has been designed to provide an early start on the process of career planning and development including career exploration, preparation for the academic and non-academic job marking, and strategies for increasing your post-doctorate professional success. Open to Population Health Science PhD students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

POPHS920 - Analytic Methods I: Study Design, Data, and Descriptive Analysis

Course Description
This course will prepare students to identify and describe cohorts of interest to answer specific well-defined research questions using different sources of real-world data. Students will learn about the estimation of various epidemiologic measures, including incidence, prevalence, and risk. The topics will be presented in the context of healthcare examples.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS921 - Population Health Analytic Methods II

Course Description
This course will teach students how to use data to make inferences about the effects of different kinds of medical interventions and policies. Topics that are covered include randomized controlled trials, pragmatic trials, counterfactuals, confounding, graphical models, cohort study design, sources of bias, propensity score approaches, instrumental variable methods, sensitivity/bias analysis, methods for studying the effects of treatment policies, generalizability, censored data, and missing data. Open to Population Health Science PhD students.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

POPHS923 - Principles of Health Measurement

Course Description
This course provides an overview of health measurement and the role it plays in health research and healthcare delivery settings. This includes a review of theories behind measurement and a discussion of the different types of clinical outcomes assessments (COAs). The course will summarize key properties of a high-quality COA and overview of different methods to evaluate the COA qualitatively and quantitatively.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

POPHS930 - Grant Writing in Population Health Sciences

Course Description
This course contains lecture-based and active learning sessions. Content includes lectures combined with class discussions on format and structure of grant applications, concepts in peer review, best practices in articulating study design and data outcomes, rigor and reproducibility in a research plan, and crafting population health science significance statements. Students write an NIH-style proposal and actively participate in mock study sections. This course introduces students to writing and critiquing grant proposals, while also preparing them for writing their dissertation proposal.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
2

Max Units:
2

POPHS975 - Population Health Independent Study

Course Description
Individual research in the field of Population Health Sciences, under the supervision of a faculty member, the major product of which is a substantive paper containing analysis and interpretation of a previously approved topic. Requires approval of the Director of Graduate Studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PORTUGUE590 - Topics in Lusophone Literature and Culture

Course Description
Exploration of topics of cultural formation in the Portuguese-speaking world that emphasize autochthonous cultural theory. Examples include: Brazilian popular culture, Literatures of Resistance, Lusophone Africa and Independence, Portugal Post-Salazar. Level of Portuguese required varies with semester topic; students should consult instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PORTUGUE590S - Topics in Lusophone Literature and Culture

Course Description
Exploration of topics of cultural formation in the Portuguese-speaking world that emphasize autochthonous cultural theory. Examples include: Brazilian popular culture, Literatures of Resistance, Lusophone Africa and Independence, Portugal Post-Salazar. A graduate-level course open to juniors and seniors. Level of Portuguese required varies with semester topic; students should consult instructor. Prerequisite: 300-level Portuguese course or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PORTUGUE590SP - Preceptorial in Lusophone Literature and Culture

Course Description
A preceptorial in Portuguese, requiring concurrent enrollment in Portuguese 590S. Further information available from instructor.

Grading Basis
No Grade Associated

Units

Min Units:
0

Max Units:
0

PORTUGUE712 - Race, Class, and Family in Contemporary Literature: Journeys, Generations, and Translations

Course Description
An opportunity to study with the Italian author Igiaba Scego, this English-language course explores representations of race, class & generations in contemporary fiction, with an emphasis on translated fiction. The course has 3 parts: 1) Analysis of Scego's work, which is crucial to debates on migration, decolonization, racism, feminism & translation; 2) read Italian and Brazilian authors to examine the intersection of color and class that cross Italy & Brazil from the colonial period to today, including the journeys & interactions between parents, siblings; 3) discussion of Scego's just-translated 'The Color Line,' which moves between the U.S., Italy, and Somalia, & Final projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN712 RACE, CLASS, & FAMILY IN LIT, ROMST712 RACE, CLASS, & FAMILY IN LIT

PORTUGUE791 - Special Readings

Course Description
Supervised independent study and reading. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PSY500S - The Cinematic Depiction of Psychopathology

Course Description
Critically explore depictions of mental illness in modern cinema and television, and the extent to which they capture our emerging understanding of dysfunction in core neural circuits supporting normal behavior. Prerequisite: Psychology/Neuroscience 277.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI500S THE CINEMA OF PSYCHOPATHOLOGY

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

PSY510S - Developmental Psychopathology

Course Description
Examines emotional and behavioral disorders in childhood and adolescence from a developmental perspective. Issues addressed include biological, cognitive, familial, and social aspects of the disorders and relevant risk and protective factors. Open only to graduate students and advanced undergraduate students.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry, (R) Research, (STS) Sci, Tech, and Society, (SS) Social Sciences

PSY561S - Evolution, Cognition, and Society

Course Description
Using primary literature in evolutionary anthropology and cognitive science to discuss major societal events, behaviors, and issues. Topics include sex, prejudice, religion, music, abortion, illness, sexuality, global health, death, politics, economics and drugs. Emphasis on biological and cognitive perspectives to solving today's biggest personal, local and global problems. Topics will change each semester; course can be taken more than once. Prerequisite: at least one course in behavior, ecology, or cognition at the 200+ level.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EVANTH561S EVOL COGNITION & SOCIETY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (NS) Natural Sciences

PSY575 - Brain and Language

Course Description
The relationship of brain and language is explored through a variety of methodologies and approaches, including studies of first and second language acquisition across cultures, multilingualism, language disorders. Neuroimaging studies (including electrophysiological and hemodynamic techniques) are central to understanding current neurobiological, neurophysiological and neurolinguistic perspectives of representation of language(s) in the brain. Readings and case studies focus on the latest theoretical contributions to the field. IRB certification and data collection are required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST510 BRAIN AND LANGUAGE, NEUROSCI510 BRAIN AND LANGUAGE

General Education Curriculum Codes
(R) Research, (NS) Natural Sciences

PSY590 - Special Topics in Psychology

Course Description
Advanced topics vary by semester and section from the areas of Psychology: Abnormal/Health, Biological, Cognitive, Developmental or Social. Consent of instructor and/or specific prerequisites may be required for specific offerings. Open to Undergraduate and Graduate/Professional students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PSY601S - Psychology Teaching Seminar

Course Description
Exploration of issues relevant to teaching in psychology and related disciplines. Focus on a variety of pedagogical issues: course development, teaching strategies, preparation of materials, evaluation, classroom management. Strong emphasis also on ethical issues bearing on pedagogy. Open to undergraduates serving, or scheduled to serve, as teaching assistants in psychology, as well as to graduate students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EDUC601S PSYCHOLOGY TEACHING SEMINAR

General Education Curriculum Codes
SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

PSY603S - Teachers as Scientists: Psychological Research in the Classroom

Course Description
How can psychology help us understand and improve education? In this course, students will develop skills as both critical consumers and producers of empirical research on teaching and learning. Students will develop original, testable hypotheses in the domain of teaching and learning and design ethical studies to test those hypotheses. This is a course for undergraduate and graduate students who are interested in teaching, education more generally, and/or in the application of psychology to real-world problems. Undergraduate students must have fulfilled P&N major requirements in methods and statistics. Prerequisite: For undergraduates, any one of the following statistics courses: Psychology 201L, Statistical Science 101, 102, 104, 111, 250 or Mathematics 342, and any one of the following methods courses: Psychology 202 or 301, 302L, 303L, 304, 305, 306, 308L, 309, 309K, 310, 313. No prerequisites for students with graduate standing.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry, (R) Research, (STS) Sci, Tech, and Society, (SS) Social Sciences

PSY610S - The Psychology of Mindfulness Meditation: Theory, Research, and Practice

Course Description
Mindfulness meditation in relation to psychological and physical health. Traditional Buddhist teachings and contemporary Western perspectives on mindfulness. Survey of empirical research, including controlled trials and studies of basic mechanisms and processes through self-report, psychophysiological, and neuroimaging methods. Use of mindfulness practices in behavioral and other psychotherapies. Includes experiential learning through meditation practices in class and for homework assignments, as well as lecture and discussion. Readings mostly original journal articles and book chapters. Prerequisites: Psychology 102, 105, or 106 desirable. Open to graduate and advanced undergraduate students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, NS - (NS) Natural Sciences, SS - (SS) Social Sciences

PSY611 - Global Mental Health

Course Description
Examination of global mental health from perspectives of culture, public health, epidemiology, human rights, policy, and intervention. Disciplines include cross-cultural psychiatry, medical anthropology, public mental health, and economics. Topics include ethics, stigma, cross-cultural classification of mental health, ethnopsychology, trauma, violence, disasters, and displacement. Populations include children, ethnic minorities, refugees, survivors of complex emergencies, and persons with chronic disease. Course highlights mixed-methods approaches to research and intervention evaluation. Designed for graduate students & advanced undergraduates. Prior research methods course recommended.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GLHLTH660 GLOBAL MENTAL HEALTH, CULANTH611 GLOBAL MENTAL HEALTH, RIGHTS660 GLOBAL MENTAL HEALTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, NS - (NS) Natural Sciences

PSY625S - Motives, Goals, and Social Behavior

Course Description
Covers a variety of topics involving the motivations underlying a variety of social behaviors (such as interpersonal relationships, stereotyping, and achievement) and the social and psychological processes involved when people try to regulate their own motives, thoughts, emotions, and behavior. Reading and discussion of literature on current theory and research on motivation, goal-directed behavior, and self-regulation.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(SS) Social Sciences

PSY650S - History of Mental Illness

Course Description
What is madness? Historical analysis offers a variety of answers to this question. This course will provide students with a broad introduction to the modern history of mental illness, with particular emphasis on the nineteenth and twentieth centuries. We will cover a diverse set of issues, including the disciplinary formation of psychiatry and neurology, new medical understandings of pathology, and the political assumptions and ramifications of defining and redefining madness in the North Atlantic and abroad.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT650S HISTORY OF MENTAL ILLNESS, HISTORY650S HISTORY OF MENTAL ILLNESS, NEUROSCI650S HISTORY OF MENTAL ILLNESS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

PSY671S - Nature and Treatment of Eating Disorders Across the Lifespan

Course Description
Study of atypical and typical development of conscious somatic sensation, i.e. how individuals sense and understand body signals and how extremes of sensitivity may form part of the core phenomenology of disorders such as anorexia nervosa, pediatric obesity, and autism spectrum disorders Study of detailed narratives of patients have served as a springboard for novel hypotheses about human function. Readings alternate between primary journal articles to patient memoirs and narratives. Students interview patients struggling with eating disorders, children who binge eat, and children with high functioning autism, among other clinical conditions. Juniors, Seniors and Graduate students.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

PSY686S - Principles of Neuroimmunology

Course Description
Bidirectional communication between the brain and immune system, in disease and during normal function/homeostasis. Historical foundations of the field in disorders such as multiple sclerosis and HIV; the anatomy of CNS-immune connections; blood-brain-barrier function and dysfunction; leukocyte trafficking, surveillance, and infiltration of the CNS; cellular players including peripheral vs. CNS-resident immune cells and antigen presentation; neuroinflammation and neurodegenerative disease; recent literature highlighting the critical role of immune molecules in neural development and lifelong plasticity. Instructor consent required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI686S PRINCIPLES OF NEUROIMMUNOLOGY, NEUROBIO686S PRINCIPLES OF NEUROIMMUNOLOGY, IMMUNOL686S PRINCIPLES OF NEUROIMMUNOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

PSY705 - Adult Psychopathology

Course Description
Examination of current diagnostic and theoretical approaches to adult psychopathology and personality disorders and the implications of diagnostic and theoretical systems for assessment and treatment.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PSY706S - Advanced Cultural Psychology: Culture in the Mind, Brain and Behavior

Course Description
This course reviews the field on cultural psychology through discussion of 1) different theoretical perspectives, 2) cultural variations in mentality, focusing on several substantive domains (e.g., self, cognition, emotion, and motivation) 3) biological foundations of culture and 4) varieties of culture including religion, honor, and social class. The course will combine an overview of cultural psychology with focus on recent developments in neuroscience. Beyond requirements in the parallel undergraduate course, graduate students in this course are required to write a multi-study research proposal, lead discussions individually, and submit 1-page single spaced reaction papers weekly. Instructor permission is required for students outside Psychology & Neuroscience.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY707 - Models of Intervention and Prevention

Course Description
Review of empirically-supported treatments for adult disorders. Therapeutic relationship issues and communication style; strategies commonly used across disorders in empirically-supported treatment and prevention programs; their application to specific disorders; development of theoretically integrative treatments. Course balances discussion of theory and research findings with practical and ethical issues in treatment delivery, illustrated by case transcripts and videotapes.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PSY710 - Diversity and Mental Health: Issues in Theory, Treatment, and Research

Course Description
Discussions of theoretical, research, and clinical issues in multicultural psychology. Increase multicultural awareness and skills to conduct research and clinical practice. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PSY711S - Social Behavior and Personality

Course Description
Broad examination of current theory and research on the interpersonal, personological, and social cognitive influences on social interaction/behavior. Emphasis on: nature of social influence, function/construction of the self, relationship formation/maintenance, aggression, altruism, personality-based mediators and moderators of social behavior, and application of social psychological theory/research to real-world issues. Methodologies discussed include experimental, quasi-experimental, narrative, and observational models.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY712S - Clinical Interventions: Treating Emotion Dysregulation and Impulsivity Using DBT

Course Description

Introduction to the basic principles, strategies and methods of an empirically-based clinical intervention, Dialectical Behavior Therapy (DBT), a cognitive behavioral based treatment for individuals with severe emotional dysregulation and impulsivity. Seminar includes didactics, discussion, video demonstrations, skills practice, and role-plays as well as experiential homework assignments in order to further understanding of the theoretical underpinnings of DBT, biopsychosocial model of psychopathology, case formulation, and skills needed for conducting both individual DBT therapy and the DBT skills training group (e.g., mindfulness. emotion regulation).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PSY715 - Seminar in Consumer Behavior

Course Description

Examines the development of research in consumer behavior. Major emphasis is given to theoretical developments and empirical research, with a range of articles assigned for each topic. Topics include motivation and personality, perceptual processes, information search, choice processes, attitudes and persuasion, learning, and influence in consumer choice.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BA962 SEM CONSUMER BEHAVIOR

PSY716S - Behavioral Decision Theory

Course Description

This discussion-based seminar explores the core questions of judgment and decision making (JDM) research, including: 1) understanding the psychology of decision processes, 2) assessing the degree to which decisions are accurate, and 3) evaluating methods for improving decisions. The course uses research articles to examine both theory and empirical findings. Major topic areas include: (1) judgments under uncertainty, (2) risky choice, multi-attribute choice, and intertemporal choice, (3) emotions, motivation, and individual differences in decision making, (4) group decision making, and (5) improving decisions through nudges and choice architecture.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BA925S BEHAVIOR DECISION THEORY

PSY717 - Political Psychology (A)

Course Description
Examination of the human political situation through the study of actual problems and solutions at the level of: (1) the individual, (2) political discourse among government officials, (3) public discourse in the media.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI702 POLITICAL PSYCHOLOGY

PSY718S - Research Design

Course Description
Methodology principles of research design in psychology. Experimental, quasi-experimental and correlational research. Permission of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PSY719 - Behavioral Research Methods

Course Description
This course is designed as a practical introduction to conducting behavioral research, with a special emphasis on experiments. In the class, we introduce the PhD students to (i) the research designs and approaches behavioral researchers utilize most frequently in their careers, (ii) explore how to collect data, (iii) work through the analyses that most modern experimental researchers will need to be fluent with, and (iv) examine best practices in reviewing and writing papers. The intent of the course is to get behavioral researchers up and running as quickly as possible in their graduate careers.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BA967 BEHAVIORAL RESEARCH METHODS

PSY720 - Applied Multivariate Statistics

Course Description
Applications of multivariate statistics in psychology and related disciplines. Topics include: MANOVA, factor analysis, principal components analysis, cluster analysis, multidimensional scaling, multiple logistic regression, and various approaches to longitudinal data analysis. Covers issues in applied data analysis such as a priori and post-hoc power analyses, transformation of data, and graphical/written/oral presentation of results. Data analyzed using the SAS statistical software package, as well as other specialty programs. Mandatory weekly lab sessions. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PSY723S - Survey of Current Topics in Psychology and Neuroscience I

Course Description

First part of a two-course sequence that surveys and integrates current topics across the fields of psychology and neuroscience. Part of the breadth requirement for the Psychology & Neuroscience PhD program. Open to Psychology & Neuroscience graduate students or students in the Cognitive Neuroscience Admitting program.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1.5

Max Units:

1.5

PSY724S - Survey of Current Topics in Psychology and Neuroscience II

Course Description

Second part of a two-course sequence that surveys and integrates current topics across the fields of psychology and neuroscience. Part of the breadth requirement for the Psychology & Neuroscience PhD program. Open to Psychology & Neuroscience graduate students or students in the Cognitive Neuroscience Admitting program. Recommended prerequisite: Psychology 723S.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1.5

Max Units:

1.5

PSY727S - Theories of Developmental Psychology

Course Description

Examine worldviews and assumptions that underlie theories in developmental psychology; discuss the philosophical and historical foundations for key ideas and theories in the study and understanding of human development, take on the perspectives of key historical figures in developmental psychology; understand how change and development have been conceptualized over the history of the field; debate ongoing controversies in the field such as nature-nurture, continuity-discontinuity, universal-culturally specific development; explore the link among theoretical perspectives, research methodologies and data interpretation. Permission of instructor required.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

PSY729S - The Minds of Children

Course Description

The field of cognitive development seeks answers to fundamental questions in cognitive science: What do we know? How do we know it? And, importantly, how do we learn about it? The goal of this course is to give you a broad overview of the theories, methods, and findings related to the origins cognition in childhood. At the graduate level, this course emphasizes foundational texts but also a critical evaluation of emerging areas of research. This course is also an opportunity for junior scholars to develop original research ideas that address open questions of interest at the intersection of cognitive development and their own emerging program of research.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY730S - Foundations of Cognitive Psychology

Course Description
Current concepts and controversies in the way people and other animals perceive, think, and remember. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PSY735 - Personality Assessment

Course Description
A course for clinical graduate students on assessment of persons through a variety of methods, including personological, clinical and semi-structured interviews, analysis of narrative material, and psychological tests. Introduction to self-report, observer-report, and projective methods. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PSY737S - Language Development

Course Description
Introduces research on a fundamentally unique human ability: learning language. Covers how young children first learn about their native language, including (1) how children figure out what sounds their language includes; (2) how infants learn words and their meanings and (3) what kind of processes help babies figure out the grammar of their particular native language. Since young children understand more than they can say, the course also covers the methods available for figuring out what kids know, based on experimental and observational data. Students will discuss and present recent research articles and new study ideas. Open to graduate students with relevant background. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PSY738S - Children's Peer Relations

Course Description
Examination of the empirical literature with emphasis on the functions that peers serve for children, the developmental course of these relationships, the clinical ramifications and possible explanations for inadequate peer relations (including an examination of the family's role), and interventions used to improve children's relationships with their peers. Regular opportunities to analyze, critique, and synthesize primary research literature.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY739 - Ethical Issues in Research and Clinical Practice

Course Description
Topics including ethical issues in teaching, research, and clinical practice.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PSY740S - Psychology of Cooperation

Course Description
Human cooperation is unique in the animal kingdom in terms of both its scale and its complexity. This course will delve deeper into this key phenomenon, examining the psychology of cooperative interactions through biological, evolutionary, cross-cultural, and developmental lenses. Students will explore topics related to how cooperation has evolved, the role of culture in shaping cooperative behavior, how these behaviors develop, and the mechanisms that both support and threaten cooperation. Graduate students will: have more in-depth and extended weekly response requirements, with 500 words per response; prepare a formal pre-registration for their experimental protocols; complete five essay prompts, rather than three, for their take-home final.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY741 - Internship

Course Description
Open to students engaging in practical or governmental work experiences during the summer or regular semester. A faculty member in the department will supervise a program of study related to the work experience, including a substantive paper on a psychology and neuroscience topic that involves significant analysis and interpretation. Consent of the Director of Graduate Studies required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

PSY743 - Clinical Practicum

Course Description
Intensive experience and supervision in clinical intervention processes. Student training in psychotherapy strategies and techniques and in clinical consultation skills is conducted in clinical settings. 0 to 6 units.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
6

PSY744 - Clinical Practicum

Course Description
Intensive experience and supervision in clinical intervention processes. Student training in psychotherapy strategies and techniques and in clinical consultation skills is conducted in clinical settings. 0 to 6 units.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
6

PSY745S - Teaching Practicum

Course Description
Experience based on teaching assistantship for fall semester.

Grading Basis
Credit / No Credit

Units

Min Units:
3

Max Units:
3

PSY746S - Teaching Practicum

Course Description
Experience based on teaching assistantship for spring semester.

Grading Basis
Credit / No Credit

Units

Min Units:
3

Max Units:
3

PSY748 - Child/Adolescent Psychotherapy

Course Description
Introduction to psychodynamic and cognitive-behavioral approaches to clinical problems of children and adolescents, with an emphasis on empirically-supported interventions.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

PSY753S - Mind Wandering and Inattention

Course Description

Introduction to theoretical and practical aspects of research in cognitive science. Classes and readings will focus on popular topics in the domain of mind wandering and inattention, with an emphasis on the research process. This course will focus on critically evaluating primary-source material, and on honing presentation and writing skills.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

PSY754S - Cognitive Assessment

Course Description

This course enables students to master a key professional skill of the clinical psychologist that is used in internship, clinical practice, and academic research. Theory topics include psychometric measurement, the science of test construction, the politics and history of mental testing, and the misuses of mental testing. Students learn to evaluate and critique tests. Students learn to administer, score and interpret eh WPPSI, WISC, WAIS, and selected tests of academic achievement and neuropsychological brain functions. Students learn to write a formal report of assessment findings, to give oral consultations to patients, parents and referring physicians, to understand the legal aspects of assessment practice, and to appropriately apply test for diagnosis and treatment planning.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

PSY755 - Research Practicum

Course Description

Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

5

PSY756 - Research Practicum

Course Description

Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

6

PSY757S - Cognitive Neuroscience Colloquia

Course Description
Graduate students (2nd year and higher) and other research trainees (e.g. postdocs) in cognitive neurosciences will each take a turn at presenting a research topic (e.g. a research update, a practice talk, an experimental proposal, presentation of a scientific article) in a forum aimed at helping junior researchers develop and hone their presentation skills. Consent of instructor required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

PSY758S - Cognitive Neuroscience Colloquia

Course Description
Graduate students (2nd year and higher) and other research trainees (e.g. postdocs) in cognitive neurosciences will each take a turn at presenting a research topic (e.g. a research update, a practice talk, an experimental proposal, presentation of a scientific article) in a forum aimed at helping junior researchers develop and hone their presentation skills. Consent of instructor required.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

PSY759S - Principles in Cognitive Neuroscience I

Course Description
Introduction to the cognitive neuroscience of emotion, social cognition, executive function, development, and consciousness. Topics also include cognitive disorders, and computer modeling. Highlights current theories, methodological advances, and controversies. Students evaluate and synthesize findings across a variety of research techniques. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROBIO759S PRINCIPLES IN COG NEURO I

PSY760S - Principles in Cognitive Neuroscience II

Course Description
Introduction to the cognitive neuroscience of emotion, social cognition, executive function, development, and consciousness. Topics also include cognitive disorders, and computer modeling. Highlights current theories, methodological advances, and controversies. Students evaluate and synthesize findings across a variety of research techniques. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROBIO760S PRINCIPLES COGNITV NEUROSCI II, PHIL754S PRINCIPLES COGNITV NEUROSCI II

PSY762 - Functional Magnetic Resonance Imaging

Course Description
This course will cover the complete fMRI analysis pipeline, from the scanner to constructing brain maps. Students will be trained on basic principles of fMRI, artifact detection, preprocessing, and task-fMRI signal estimation. This course will also cover recent advancements in resting-state fMRI, connectivity/graph-theoretic/independent-component analyses, and machine learning. The course will consist of lectures, review of key research papers and integrated laboratory sessions. The laboratory sessions will include hands-on analysis of fMRI data sets. Students will gain experience both in the theoretical principles of fMRI analysis and in the practical aspects of implementing them.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROBIO881 FUNC MAGNETC RESONANCE IMAGING

PSY763S - Psychology and Neuroscience First Year Seminar I

Course Description
Introduction to graduate school and academia, talk preparation and practice, grant writing, career paths, ethics. This is a two semester class with 1.5 credits each semester.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1.5

Max Units:
1.5

PSY764S - Psychology and Neuroscience First Year Seminar II

Course Description
Introduction to graduate school and academia, talk preparation and practice, grant writing, career paths, ethics. This is a two semester class with 1.5 credits each semester.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1.5

Max Units:
1.5

PSY765S - Psychology and Neuroscience Grant Writing

Course Description
Editing and submission of NSF application; peer review of other students' grant submissions. Prerequisite: Psychology 763S or equivalent. Instructor permission required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

PSY766 - Data Analysis for Experiments

Course Description
This course covers practical considerations for how to analyze experimental data, with an emphasis on ANOVA and its offshoots (e.g., ANCOVA). A focus is on how design and measurement decisions can inform which statistical techniques are able to be validly conducted. The course also aims to provide intuition and logic behind different analyses so that students can understand what research questions different analyses can (and cannot) answer and which analyses to conduct, given their data and research design. Analyses are conducted in both SPSS and R (as possible). Students can use their preferred language but should be prepared to use (or to learn to use) syntax or scripts for analyses.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

PSY767 - Applied Linear Modeling and Regression Analysis

Course Description
Applications of the general linear model (GLM) typical in the social and behavioral sciences. Review of the foundations of statistical inference, including null hypothesis significance testing, confidence intervals, effect size, and statistical power. Theory and application of model comparisons, simple, multiple, and hierarchical multiple regression, incorporation of categorical predictors, interaction effects, diagnostics, and mediation analysis. Training in the use of the R statistical programming language. Mandatory weekly lab sessions. Assumes successful completion of an undergraduate course in psychological statistics (or equivalent).

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

PSY768 - Applied Structural Equation Modeling

Course Description
Applications of structural equation modeling typical in psychology and related disciplines. Topics include: notation, path diagrams, specification and identification, estimation, modification, power estimation, measurement models, multivariate regression models, panel models, growth models. Emphasis on model comparisons, limits on causal inference. Equips students to apply, interpret, and reports results of structural equation modeling analyses. Training in the use of relevant software. Mandatory weekly lab sessions. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PSY769S - Research Synthesis and Meta-Analysis (G)

Course Description
Recent developments in research synthesis in the behavioral and medical sciences. Topics include: problem formulation; scientific communication; methods for locating research; problems in retrieving data from secondary sources; judging the quality of research; effect size estimation; analyzing variance in effect sizes across studies. Prerequisites: Statistics through analysis of variance. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
EDUC794S RESEARCH SYNTHESIS

PSY772S - Everyday Cognition

Course Description
Key cognitive processes (e.g., attention, memory, comprehension, problem solving) and how they work in everyday settings. Cognition in classrooms, courtrooms, hospitals, grocery stores, kitchens, jobs, sports, and dance. Focus on Medical Cognition, Courtroom Cognition, and Memory for Movement. For each setting--successful vs. mediocre performance, types of errors, and applications. Visits by experts (e.g., pharmacists, doctors, judges, lawyers, chefs, choreographers) to discuss the cognitive processes essential for their jobs.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY773S - Reward and the Brain

Course Description
This course will provide an overview of the neural basis of reward. We will read and discuss the classic and contemporary literature on both animal and human models. Topics to be covered include: 1) historical development of the concept of reward and its relationship with reinforcement; 2) reward, homeostasis, and motivation; 3) relationship between reward and learning (reinforcement learning, Pavlovian and instrumental conditioning); 4) contribution of dopamine and other neuromodulators to reward; 5) neural substrates of intracranial self stimulation; 6) limbic cortico-basal ganglia circuit contributions to reward.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI773S REWARD AND THE BRAIN

PSY780S - Foundations of Behavioral and Computational Neuroscience

Course Description
Survey and in depth discussion of the methods, theory, and current research in the field of behavioral and computational neuroscience. Emphasis on animal models and neurobiological underpinnings of learning, memory, and cognition. Covers the latest developments in research on neuroanatomical, cellular and molecular substrates of behavior with emphasis on the influence of development, environment, and experience across the lifespan.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
NEUROSCI780S FNDTION OF BEHAV/COMP NEUROSCI

PSY782S - Psychology of Imagination

Course Description
Imagination is a core feature of human cognition, and the study of human imagination possibly one of the broadest and least unified topics in psychological science. This course, drawing on readings from cognitive psychology, neuroscience, developmental psychology, and philosophy, is for anyone interested in understanding the psychology of imagination as it functions in everyday thought and action. Topics covered: counterfactual and future thinking, mind-wandering, creativity, children's imaginary friends, pretense, and fantasy, imagination in clinical populations, and imaginations in social life (relationships, organizations, social identity.)

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY795S - Research Development in Psychological Science

Course Description
The primary purpose of the course is to guide the development of a research project, related to dissertation research in psychology, utilizing the steps needed to develop and write a predoctoral National Research Service Award (NRSA) (F31). The course is pragmatic and oriented toward skills building in research development and grant writing. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

PSY797 - Professional Issues in Clinical Psychology

Course Description
This course is designed to provide an educational experience that will introduce and enhance the student in the science and profession of clinical psychology. Course topics will address and assure that the student understands critical issues in the professional activities of clinical psychologists, has exposure to a variety of career trajectories, develops appropriate clinical skills in preparation for predoctoral internship training, initiates and is productive in an area of scholarly research, and integrates professional contributions with other important life activities.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

PSY798 - Professional Issues in Clinical Psychology

Course Description
This course is designed to provide an educational experience that will introduce and enhance the student in the science and profession of clinical psychology. Course topics will address and assure that the student understands critical issues in the professional activities of clinical psychologists, has exposure to a variety of career trajectories, develops appropriate clinical skills in preparation for predoctoral internship.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1

PSY890S - Special Topics in Psychology

Course Description
This seminar is designed to provide students with an opportunity to engage in an advanced and intensive examination of the research literature on a special topic in psychology. Specific topics will vary by semester.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

PSY950S - Neurophilosophy

Course Description
Status of such concepts of the 'self,' 'person,' 'free will' in the age of mind science. Conflict between scientific and humanistic images of persons. Varieties of naturalism, neurophilosophy, and neurophenomenology Explanation, prediction, correlations, identities, reduction, levels, laws, functions, and mechanisms in mind science. The logical relations between neurobiology, cognitive, and affective neuroscience, cognitive science, psychology, and social science(s).

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PHIL950S NEUROPHILOSOPHY

PSY990 - Special Readings in Psychology

Course Description
Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RACESOC795 - Bass Connections Race & Society Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to investigate how race intersects with various aspects of society and lived experience. Teams often work with external experts and partners. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RACESOC795T - Bass Connections Race & Society Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to investigate how race intersects with various aspects of society and lived experience. Teams often work with external experts and partners. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RACESOC796 - Bass Connections Race & Society Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to investigate how race intersects with various aspects of society and lived experience. Teams often work with external experts and partners. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RACESOC796T - Bass Connections Race & Society Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to investigate how race intersects with various aspects of society and lived experience. Teams often work with external experts and partners. A team's work may run in parallel with or contribute to an on-going research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RACESOC797T - Bass Connections Race & Society Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on the semester and section. Teams of undergraduate and graduate students work with faculty to investigate how race intersects with various aspects of society and lived experience. Teams often work with external experts and partners. A team's work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, data collection and analysis, fieldwork, and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RACESOC798T - Bass Connections Race & Society Research Team

Course Description
Bass Connections Year-long Project Team. Topics vary depending on semester and section. Teams of undergraduate and graduate students work with faculty to investigate how race intersects with various aspects of society and lived experience. Teams often work with external experts and partners. A team's work may run in parallel with or contribute to an ongoing research project. Teams will participate in seminars, data collection and analysis, field work and other learning experiences relevant to the project. Requires final paper or product containing significant analysis and interpretation. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RELIGION503S - The Black Radical Tradition

Course Description
Cedric Robinson's 'Black Marxism' (1983) has long been taken as foundational to the Black Radical Tradition and specifically Black people's enduring resistances to racial oppression. For Robinson such resistances have not only been legible as class struggle, but as forms of political, spiritual, artistic, intellectual opposition and underground activism. What his work has left unaddressed is the nature of such resistances in gendered terms and in terms that move beyond the United States. This course attempts to expand the definition of what is 'Black' 'Radical' and a 'Tradition' conjoining histories of struggle in South Africa and the US while attentive to their gendered sensibilities.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS503S THE BLACK RADICAL TRADITION, CULANTH503S THE BLACK RADICAL TRADITION, POLSCI589S THE BLACK RADICAL TRADITION, ICS504S THE BLACK RADICAL TRADITION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

RELIGION505S - Dystopia, Speculation, and the Transhuman: Octavia Butler

Course Description
This course will examine the work of science fiction writer, Octavia Butler. Critically engaging her novels and short stories, we will discover and work through a series of themes and tropes - dys(u)topia, the transhuman, temporality, the apocalyptic, survival, and hierarchical thinking as the root of racism and sexism. We will ask questions in this course about the relationship between sci-fi, speculative fiction, and the imagination of the present. In addition, Butler's fiction, which imagines various forms of miscegenation and interspecial contact, will invite us to deconstruct and re-imagine the figure of the human.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS511S OCTAVIA BUTLER, GSF511S OCTAVIA BUTLER, ENGLISH571S OCTAVIA BUTLER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

RELIGION511S - The Fetish: The Role of Things in Spiritual, Economic, and Sexual Life

Course Description
This course explores the social relationships produced by debates over the value and agency of material things ranging from the cross and the Eucharist to black leather, fur, dildos and even the more mundane commodities through which capitalism and socialism have defined their rivalry. Thus we will examine the highly charged role of things in religion, economics, and spiritualized erotic relationships, as well as the centrality of the fetish concept in the mutual transformation of modern Africa and the West.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS512S THE FETISH, CULANTH511S THE FETISH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

RELIGION524S - Columbus: A Global History

Course Description
This seminar returns to the global framework of Columbus's encounters with what would come to be called the New World. Students will study medieval conceptions of the world in maps, cosmographies, and travel literature as well as developments in China and the Americas before 1492. Our central focus will be texts by Columbus and his contemporaries: Peter Martyr d'Anghiera, Amerigo Vespucci, Martin Waldseemüller, Bartolomé de las Casas, Peri Reis, Mehmed el-Su'udi, and Jacopo ha-Kohen. Attention will be given to slavery, colonization, evangelization, prophecy, apocalypticism, and resistance. We will also explore the economic and intellectual consequences of Columbus's voyages across time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY526S COLUMBUS: A GLOBAL HISTORY, MEDREN554S COLUMBUS: A GLOBAL HISTORY, ROMST526S COLUMBUS: A GLOBAL HISTORY, CULANTH527S COLUMBUS: A GLOBAL HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations

RELIGION527S - Islam and Human Rights

Course Description
The main focus of the course is inquiry about possibility of human rights for Muslims in the modern time. The notion of human rights is represented by the United Nations documents, while Islamic teachings are divided into Islamic ethics and Islamic law. The former contains universal values such as dignity, justice, mercy, love, and freedom. The latter, in its traditional iterations, suffers from issues of gender discrimination, religious intolerance, restriction of religious freedom, the problem of apostasy, and violent punishments. Students will survey major conservative and reformist Muslim approaches to human rights to foster the development of critical analytic and comparative skills.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RIGHTS527S ISLAM AND HUMAN RIGHTS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (R) Research, (CZ) Civilizations, (SS) Social Sciences

RELIGION532S - The Evil Eye in Material Culture from Late Antiquity to Islam

Course Description
The phenomenon often referred to as the 'evil eye,' is an enduring belief that harm can be exerted through the gaze, causing illness, misfortune, and even sudden death. This seminar explores the material culture of the evil eye in the eastern Mediterranean and Near East from pre-Islamic late antiquity (200-600 CE), to medieval Islam (1200-1400). Students will engage in cross-cultural analysis, examining a range of artifacts and images across media, and consider recurring themes in their research, like the relationship between artifacts and the body, debates surrounding licit and illicit magical practices, and intersections between material and textual evidence.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST570S THE EVIL EYE, AMES570S THE EVIL EYE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RELIGION552S - Live Images: Ancient and Medieval Representations of the Divine

Course Description
The study of ancient and medieval works—speaking statues, miraculous icons, moving paintings. Seminar addresses questions of artistic and pictorial agency. Readings include theoretical texts, primary sources, and historical studies.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST558S LIVE IMAGES, VMS533S LIVE IMAGES, MEDREN507S LIVE IMAGES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RELIGION560S - Reading Heidegger

Course Description
Closely reading major works by Heidegger Tracing the Turn in Heidegger's thought from the early metaphysical writing to the lecture courses of the 1930s. Underscores the role played by language in Heidegger's thought Probes what aesthetics means within the context of Heidegger's work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES540S READING HEIDEGGER, LIT543S READING HEIDEGGER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RELIGION580S - History of Buddhist and Christian Interactions

Course Description
The study of the global encounter between Buddhists and Christians from the sixteenth century to the present. Topics to be covered include missionary encounters, conversion, polemical literature, inter-religious dialogue, and religious exchange, as well as the portrayal of these interactions in literature and the arts. At least one previous course in Buddhism or Asian religions and a course in religious studies is recommended.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES580S BUDDHISM AND CHRISTIANITY

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations

RELIGION581S - Pan-Asianism, Religion, and the State in Modern Asia

Course Description
An examination of the interaction between religious institutions and the state in modern Asia. The role of religion in the formation of pan-Asian identity in Asia also will be investigated.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES581S RELIGION IN MODERN ASIA, EAS581S RELIGION IN MODERN ASIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations

RELIGION605S - Blackness, Social Death, and the Volatile Sacred

Course Description
In recent years, we have witnessed a renewed energy around theorizing blackness and its unsettling presence in the world. In addition to endeavors to think through the antagonistic relationship between blackness and the ideal human, authors have addressed topics such as black gender, the affinities and tensions between blackness and queerness, the ways in which blackness interrupts the logic of property, and the particular qualities of anti-black violence. In this course, we will pursue an aspect of contemporary black thought that has been central but undeveloped -- how blackness reimagines the religious and the sacred. Authors: Spillers, Wynter, Hartman, Sharpe, Moten, Glissant, Gumbs.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS602S BLACKNESS,SOCIAL DEATH,SACRED, ENGLISH680S BLACKNESS,SOCIAL DEATH,SACRED, GSF602S BLACKNESS,SOCIAL DEATH,SACRED

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RELIGION606S - Hebrew Biblical Texts

Course Description
Select prose and poetic Hebrew biblical texts. Prerequisite: Old Testament 760 and 761 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
JEWISHST606S HEBREW BIBLICAL TEXTS

RELIGION620 - Exegesis of the Hebrew Old Testament

Course Description
A. Pentateuch B. Historical Books C. Major Prophets D. Minor Prophets E. Writings F. Proverbs G. Genesis. H. Selected biblical passages. Consent of instructor required for undergraduates.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION635S - Exegesis of the Greek New Testament: John's Gospel

Course Description
Discussion and analysis of the Gospel of John with a special focus on historical-critical approaches, including authorship, date, sources, theology, literary analysis, and relationship to other early Christian works. Prerequisite: two years of Greek or the equivalent. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RELIGION636S - Passion Narratives in Greek

Course Description
This course offers a critical, historical approach to the Passion and Resurrection Narratives in the Gospels of Matthew, Mark, Luke, John and Peter. Participants in the course will analyze the texts from a variety of perspectives, focusing especially on source-criticism, form-criticism, redaction-criticism, textual criticism, feminist, and literary-critical approaches. This course is for master's students who already have familiarity with the Greek texts.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION663 - Islam and Modernism

Course Description
Cultural, religious, and ideological forces that shape Muslim responses to modernism.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum

RELIGION665S - Islamic Philosophy & Mysticism (Sufi's Approach to Philosophy)

Course Description
The course explores the critical analysis of the creative products of the human intellect in mystical experiences including the symbolic stories of Avicenna, al-Gazali, Ibn Tufail, Suhrawardi & Mulla Sadra. It covers the key points of the theoretical and practical mysticism such as nature of the man, asceticism, unity and final abode, Sufi's style of life, four spiritual journeys, light and varieties, angelology, the archetypal world, vision and intellect, knowledge & presence, the hierarchy of knowing, the semantics of the modulation of being, reality & the circle of being, diversity in unity and unity in diversity, the unity of the knower and the known, unity of existence, and salvation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MEDREN665S ISLAMIC PHILOSOPHY & MYSTICISM

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, CZ - (CZ) Civilizations

RELIGION690 - Special Topics in Religion

Course Description
Subject varies from semester to semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION690S - Special Topics in Religion

Course Description
Subject varies from semester to semester.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION700 - East Asian Studies Core Course: Fields and Methods

Course Description
A graduate-level introduction to the study of East Asia. Students will survey a variety of disciplinary approaches to East Asian studies. The course will be directed by the director of graduate studies or the institute director. Units of the course will be taught by core faculty of the Asian/Pacific Studies Institute and visiting lecturers. Discipline approaches to be addressed include anthropology, art history, economics, history, literary studies, political science, religious studies, and sociology. Department consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES700 EAST ASIAN STUDIES CORE COURSE, EAS700 EAST ASIAN STUDIES CORE COURSE, HISTORY707 EAST ASIAN STUDIES CORE COURSE

RELIGION701S - Elementary Syriac

Course Description
Introduction into the language; reading and analysis of simple texts.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RELIGION702S - Modern Jewish Thought

Course Description
The seminar offers a survey of key moments in modern Jewish thought. It deals with the challenges and opportunities that modernity presented Jewish existence, and how these were addressed by Jewish thinkers from Baruch Spinoza and Moses Mendelssohn to Emmanuel Levinas and feminist thinkers. We will discuss the relationships between continuity and break, transformation and renewal that features modern Jewish thought in relation to its medieval articulations as well as in relation to various philosophical and theological traditions, and investigate how Judaism and Jewishness are redefined by means of present-day conceptual frameworks.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY705S MODERN JEWISH THOUGHT, GERMAN702S MODERN JEWISH THOUGHT

RELIGION703S - Aramaic

Course Description
Study tests representing 'Standard Literary Aramaic': Biblical, Qumran, and Targumic (Targum Onkelos). Other Aramaic language forms may be included. Prerequisite: Should preferably have elementary knowledge of Hebrew.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RELIGION707 - Introductory Sanskrit Language and Literature

Course Description
Introduces classical, literary Sanskrit, the ancient and trans-continental language of India's intellectual heritage, history, and sacred scriptures. Teaches students Devanagari script, to learn and analyze grammatical forms and structures, vocabulary, and to interpret meaning. Provides an overview to the literature and civilizational importance of Sanskrit, from the ancient past to the present. Course will give graduate students the grammatical and analytic tools they will need to begin to read and interpret original texts.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SANSKRIT701 INTRO SANSKRIT LANG & LIT

RELIGION708 - Intermediate Sanskrit Grammar and Readings

Course Description
The second semester's follow-up to Introductory Sanskrit, this course completes an overview of the grammar and syntax of Classical Sanskrit, and transitions to primary readings in original sources of the literature. These primary readings are chosen in consultation with graduate students based on their curricular needs and particular research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SANSKRIT702 INTERMEDIATE SANSKRIT

RELIGION709 - The Septuagint

Course Description
A study of the modern critical use of the Greek Old Testament. Prerequisite: knowledge of Greek and Hebrew.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RELIGION710S - Academic Writing for Ancient Studies

Course Description
Intended primarily for MA and PhD students in the Hebrew Bible/OT, NT, and Early Christianity tracks of the GPR, namely the tracks that focus on ancient texts primarily from the Mediterranean world, this course will highlight the variety of writing skills needed for academic success.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION733 - Living Issues in New Testament Theology

Course Description
Critical examination of major problems and issues in New Testament interpretation and theology.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION743 - The Life of Paul

Course Description
A detailed critical reconstruction of Paul's biography, including his chronology, movements, and sociological locations(s), in order to provide the appropriate backdrop for the exegesis of his letters. Prerequisites: doctoral students or permission of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION749S - Theology of St. Thomas Aquinas

Course Description
Seminar on themes and problems in the thought of Thomas Aquinas. Consent of instructor required. Also taught as Christian Theology 962.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION752S - Faith and Reason

Course Description
Seminar will take up the impulse given by the encyclical Fides et Ratio and explore the relationship of faith and reason, of theology and philosophy, on the threshold of a new century.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION756 - Happiness, Virtue, and Friendship

Course Description
Issues of their relationship in moral philosophy.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION759S - Health Care in Theological Context II

Course Description
This course examines the purposes and meaning of medicine in the context of particular religious traditions and practices, focusing particularly on Christianity, but also Judaism and Islam. Through examining the history, theology, and practices of these traditions, participants will grapple with the purpose of medicine and the relationship between theology, ethics and medicine in our day

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION765S - Existentialism, Nihilism, and Religion

Course Description
This course engages the relationship between nihilism, which claims that there are no secure foundations that provide life with meaning and purpose, and existentialism, a philosophy that prioritizes the freedom and responsibility of the individual subject against essential truths that precede existence and human striving. We will interrogate what it means to live in the afterlife of what Nietzsche calls the 'death of God' and question whether this spells the end of religion, spirituality, and the need for practices of the sacred. We also interrogate how race and gender pertain to questions about existence, being, nothingness, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS765S EXISTENTIALISM, NIHILISM, RELI, GSF765S EXISTENTIALISM, NIHILISM, RELI, ENGLISH765S EXISTENTIALISM, NIHILISM, RELI

RELIGION767S - How Blackness Thinks

Course Description
This course examines current directions in conceptualizing black social life and performance. Examples are 'black feminist theory and practice,' 'queer of color discourse,' and more recently 'Afro-pessimism' and 'Black Optimism.' The guiding premise of the course is that when understood as exceeding racial category, blackness emerges as out(sider)ness, as differentiated social practice internal to which is a mode of thinking, a practice of study, perhaps even a certain performance of the sacred that is at once connected with the religious and the secular but that cannot be equated with either. In considering this outness of black thinking, authors we may read include: Fanon, Wynter, Spillers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS767S HOW BLACKNESS THINKS, ENGLISH767S HOW BLACKNESS THINKS

RELIGION768S - Segregated Sundays: Church, Race, Class, and Caste

Course Description
The Christian church remains the most segregated institution in America. It has been nearly sixty years since the historic 1954 Supreme Court decision in Brown vs. the Board of Education that began public school integration. And it has been almost fifty years since Martin Luther King's I Have a Dream speech in 1963. Yet, most Protestant congregations still reflect the racial makeup of their pre-Civil Rights era counterparts. This course explores why this is so and asks how we can move forward toward a religious life that better reflects the diversity of the nation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION770 - Islamic Interconnectivities

Course Description
This course introduces various aspects of global Islamic history and historiography. It interrogates how to define, analyze, and probe the interconnectedness of Muslim societies across time. After exploring a range of theoretical and historiographic models for what scholars have referred to as a 'multi-civilizational civilization,' the 'Islamicate,' and a 'discourse-based world-system,' the course delves into thematic examinations of the transregional links and networks that have worked to connect Muslims across Afro-Eurasia.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY770 ISLAMIC INTERCONNECTIVITIES

RELIGION771S - Islam, Medicine, and Healing

Course Description
This course explores the intersections of religion and medicine in multiple Muslim contexts. Drawing on several disciplinary perspectives including anthropology, history, gender studies, and religious studies, it investigates how questions of health, healing, and illness have been addressed from premodern patterns to colonial and post-colonial transitions to the present. We will examine how different approaches to spirituality, law, and science congeal and compete in the sites of the human body, animals, food, medicines, and hospitals. From traditional healing practices to contemporary bioethics, the course considers how religion and medicine have been constituted, lived, and experienced.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION772S - Cross-Cultural Encounters

Course Description
The dynamics of cross-cultural interaction have actively shaped the world for many centuries now. This class explores some of the religious, social, and economic forces that have fostered increasingly global contacts in history. In particular, it examines how centrally located and cosmopolitan Muslims played a critical role in connecting people of far-flung regions, cultures, and religions with one another. It surveys the myriad encounters of Muslims, Buddhists, Confucianists, Hindus, Jews, Christians and more across Afro-Eurasia and into the Americas. How did religious networks, processes and events foster historic exchanges of ideas, practices, and commodities across the world?

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY772S CROSS-CULTURAL ENCOUNTERS

RELIGION773S - Islam, Law, and Society

Course Description
Examines the history and development of Islamic law in the context of different Muslim societies from its origins to the present. Varying course themes include ethical and legal norms, gender dynamics, social networks, commerce, governance, secularism, modernity, and more.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY773S ISLAM, LAW, AND SOCIETY

RELIGION774S - Ideology and Religion in Muslim Central Eurasia

Course Description
While Islam as a lived religion offers a common starting point to understand the experiences of Muslims in Central Eurasia, ideologies such as Islamism, positivism, nationalism, and socialism have informed the various powers that attempted to regiment their lives according to various blueprints for a future society since the nineteenth century. Thus, the minds and bodies of Central Eurasia's Muslims have been the subject of intense intellectual debates and social engineering interventions, and in their experiences, this course explores the modern interplays of religion and ideology as they have been mediated by individual or group interests, power dynamics, and mundane realities.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES774S IDEOLOGY AND ISLAM IN EURASIA, SES774S IDEOLOGY AND ISLAM IN EURASIA, HISTORY774S IDEOLOGY AND ISLAM IN EURASIA

RELIGION776S - Genealogies of Secularism

Course Description
This graduate-level seminar deeply examines the genealogies of secularism through a global and comparative historical lens. It interrogates how secularism is related to the concept of religion, from the formation and development of secularism to the policies and laws enacted by secular states. How are questions of gender equality, race, and the exercise of power connected to the practice of secularism? What is the place of religious tolerance, free speech, and minority rights in secular societies? How do secular states adjudicate questions of religion? A diverse range of case studies include Egypt, France, Turkey, the United States of America, and beyond.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY776S COMPARATIVE SECULARISM

RELIGION777S - Gandhi's Modernity: Insights & Ironies

Course Description
How did Gandhi define modernity, reject it, or embody it? This course discusses Gandhi's modernity as a two-sided paradox—passionate critic of civilizational modernity while also radically modern. Through discourses of development, secularism, and capitalism that underlie notions of modernity, study how Gandhian praxis reformulates the modern through self-transformation and a program for collective good. Do traditional concepts of the ashram, the ascetic, and homespun fabric express Gandhi's vision of a modern utopia, or an actualizable political future? What ironies surface as Gandhi navigates the terrain of the modern? What challenges? What insights? Mandatory, time-sensitive training and approval process—see synopsis.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION780S - American Foreign Missions and Chinese Christianity

Course Description
This course examines the history of Christianity in China from the beginning through the twentieth century. It explores both the missionary origins of the Chinese church and the subsequent historical developments that turned Christianity into a vibrant Chinese faith. The following questions are at the center of our historical inquiry: What role did Western missionaries play in the spread of Christianity in China? What helps explain the Chinese response to the Gospel? How did Christianity take root in Chinese soil and become indigenized? What distinct features and temperament has Chinese Christianity developed? What are the implications for the future of world Christianity?

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION781S - Protestantism and the Making of Modern China

Course Description
The evangelistic, educational, medical, and social work of Protestant missions and Christian churches since the nineteenth century has been central to the emergence of modern China. This course is a search for historical understanding of the varied and vital contributions of Protestantism to Chinese modernity. The stories explored in this course will shed light on the transformative power of (primarily American) Protestant work overseas and on the various ways in which fundamental changes in modern China—from education reform to the intro of Western medicine and journalism to women's rights and the general search for civil society—were connected to the development of Protestant Christianity.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION782S - Modern Christianity Outside The West

Course Description

In 1900, 80 percent of the world's Christians were in Europe and North America. One hundred years later, 60 percent of them live in the global south and east. This course will not survey the institutional growth of Christianity throughout the non-Western world. It focuses instead on some of the central themes and patterns in the rise of global Christianity, including its tendency toward charismatic exuberance, its appeal as a modernizing force, and its capacity to inspire political reform and to mobilize the masses for social change.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION783S - Christianity's Encounter with Other Religions and Cultures: The Case of East Asia

Course Description

The modern encounter between Christianity and other religions and cultures occurred primarily in the context of a vigorous and sustained missionary movement launched in the West. The results of that encounter have been far more complex—more inspiring for some and less satisfying for others—than the simple reproduction of Christian bodies in the denominational image of Western churches. This course is a search for historical answers to those questions within the limits of modern East Asia but also with basic concerns that go beyond those boundaries, concerns that would be shared by those who contemplate the future of a globalized Christianity.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION786S - Islam, Art, & Society

Course Description

This course explores the interweaving of Islamic theology, spirituality, art, architecture, mathematics, and astronomy in the beautification of everyday objects and lived spaces. It examines how underlying principles of beauty and sacred geometry have shaped places such as hospitals, palaces, gardens, colleges, mosques, inns, and Sufi lodges as well as their historical functions in Muslim societies. Case studies include a range of diverse sites and cultural artifacts from across Afro-Eurasia.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST786S ISLAM, ART, & SOCIETY

RELIGION790 - Readings in Buddhist Texts

Course Description

Advanced readings in Buddhist texts in Chinese, Japanese, and/or Korean. Ability to read classical Chinese, Japanese, and Korean at an intermediate level is required. The texts selected for the course will vary from term to term. The course may be repeated. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION791S - Literary Translation: History, Theory and Practice

Course Description
A study of the theory and practice of translation from antiquity to the present, with a focus on religious, literary, and philosophical texts and the distinctive challenges involved in rendering such works into a different language. Topics include analysis of historically-significant translations, a survey of the history and theory of translation as a practice, a close study of the ethics of translation, and a workshop in which students will prepare, revise, and analyze their own translations. Graduate students will produce an annotated translation of a text in their research field, at a level appropriate for publication in a peer-reviewed venue. Prerequisite: Four semesters of a second language, classical or modern, or equivalent; or instructor permission.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION799 - Special Readings in Religion

Course Description
Readings vary from semester to semester. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION802S - Atheisms before Secularism from Socrates to Spinoza

Course Description
Examines atheism as a philosophical, theological, material, and political category across premodern Europe and the Middle East.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST802S ATHEISMS BEFORE SECULARISM, CLST802S ATHEISMS BEFORE SECULARISM

RELIGION809 - Selected Sanskrit Readings

Course Description
This is a reading course building on a prior knowledge of Sanskrit grammar to introduce the skills needed for reading the varieties of different kinds of texts found in Sanskrit literature including basic scriptural texts in the aphoristic 'sutra' style, more expanded Epic or lyric styles of narrative and devotional poetry, and the various protocols to be mastered for reading scholastic commentaries. The course has as a prerequisite a basic and overall knowledge of Sanskrit grammar. Prerequisite: Sanskrit 702/Religion 708.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SANSKRIT803 SELECTED SANSKRIT READINGS

RELIGION810 - Palace Intrigue: Ecclesiastes and Esther as Philosophy, Art, and Politics

Course Description
An experiment in interpretative methodology applied to two biblical books. Ecclesiastes and Esther are late texts, unconventional within the biblical canon and challenging to preconceptions, ancient and modern, of theology and religious thought. The lecture will stress the importance of these texts in Jewish art, Jewish philosophy, and traditional Jewish biblical interpretation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
JEWISHST810 ECCLESIASTES AND ESTHER

RELIGION815S - Readings in Early Christian Literature: Greek

Course Description
Close readings of key texts in early Christian literature in the original language.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

RELIGION818S - Pioneers in World Christianity

Course Description
This course focuses on extraordinary individuals who blazed trails in the making of World Christianity in modern times. We will examine the lives and the work of both Western missionaries and local Christian leaders. The following are some of the key issues we shall explore: What did those pioneers have in common? What recurring challenges did they encounter in communicating the Christian message, overcoming oppositions, and finding acceptance? How did they strike the balance between faithfulness to the core of the Christian faith and adapting the Gospel to the languages, sensibilities, and the needs of the societies and cultures they encountered? How did the pioneers relate to local communities and structures of power? What role did power relationships play in their work? How did their work facilitate (or impede) the subsequent emergence of local forms of Christianity? We will consider these in the context of—and in response to—post-colonial critiques of missionaries' involvement in Western imperialism. Some terms this course will offer travel component.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION842 - Calvin and the Reformed Tradition

Course Description
The theological development of John Calvin. A comprehensive examination of his mature position with constant reference to the theology of other reformers.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION844S - Protestants and Pictures

Course Description
History of Protestant visual culture from the sixteenth century to the present. Explores images and visual practices that characterize the early formation of European Protestantism, primarily Germany, France, and England, then moves outward to North America and Africa and Asia from the nineteenth century to the present. Special interest in the history of print and mass-produced imagery.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST844S PROTESTANTS AND PICTURES

RELIGION846S - Visual Culture of Modern Christianity

Course Description
A historical examination of leading visual themes in Catholicism and Protestantism from the sixteenth century to the present, concentrating on the emergence of imagination, imagery, uses of images and symbolic objects, and the place of the visual arts in these traditions. Book illustration, print culture, devotional practices, illustrated materials supporting evangelization, mission efforts, and education, political propaganda, and the quest for the likeness of Jesus in portraiture and devotional imagery form the primary visual artifacts to be examined.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION850S - Evangelical Traditions in America

Course Description
A study of some of the major themes in the development of transdenominational evangelicalism and fundamentalism in America from the eighteenth century to the present. A reading seminar involving analyses and discussions of literature (mostly secondary works) important for understanding American evangelicalism as a distinct movement.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION854S - The Social Organization of American Religion

Course Description
Addresses religion's formal and informal social organization. Examines how religion is organized, and explores causes and consequences of variation in religious social organization. Considers impact of demographic changes on American religion, and asks how ideas from study of social networks, formal organizations, and professions apply to religion.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION857 - American Religious Biography

Course Description
Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION859S - Roman Catholic Visual Piety in the Modern Era

Course Description
An examination of leading themes, imagery, and visual practices in Catholic devotion to saints since the sixteenth century in Europe, North America and beyond. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST859S CATHOLIC VISUAL PIETY, VMS859S CATHOLIC VISUAL PIETY

RELIGION879S - Religion and Media

Course Description
This seminar examines leading theories, concepts, topics, and historical treatments of the relationship between religion and media, with a concentration on the modern era.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION881S - Jerusalem/Istanbul

Course Description
Constantinople/Istanbul was a great imperial city from its foundation, first Byzantine and Christian and then Ottoman and Islamic. As a center of economic, religious and political power, it has also been the site of formidable struggle. Jerusalem, a city venerated by the world's three dominant monotheistic religions, has been a site of spiritual and military conflict from biblical times to the present. Both cities present models of contentious urban spaces elsewhere. Our seminar investigates the contribution of a city's physical topography and its built fabric to urban violence.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST713S JERUSALEM/ISTANBUL

RELIGION882S - Spaces, Bodies, and Narratives: Mapping Religion in Colonial India

Course Description
How imperial cartography, understood as the mapping of territories, human bodies, cultural practices, and oral traditions, influenced mapping of religion in colonial India. Political and personal contexts of British and Indian-authored ethnographies, folklore collections, colonial census reports, and their impact on anthropological imagining of religion in South Asia.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY741S MAPPING REL IN COLONIAL INDIA

RELIGION884S - Religion & Technology

Course Description
This course explores the intimate and ancient role of the cultural construction of the human body and its environment to perform sacred work. Technology is taken to mean the production of instruments that interface with the body, but it is also understood to mean the body itself as it is shaped and disciplined by religious practices and authority into selves and social bodies. Readings will range from the philosophy of technology to the literature on embodiment, religious practice, and material culture of religion. The history of religious technology in devotional culture and divination will be paired with the study of modern media technologies and the practices of religion. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION885 - Christian Manuscript Culture

Course Description
Investigating provenience & provenance of Christian manuscripts, esp. in Duke University collections. Manuscripts as windows into religious and cultural priorities of Christians from late antiquity to beyond medieval period. Books as liturgical objects; histories of transmission & reception of biblical & patristic texts; manuscripts as gifts and plunder; texts and paratexts as evidence of lived religion. Canon formation and representation, philological and aesthetic notions of 'the authentic,' and scribal and scholarly expertise as aspects of book production and circulation will also be addressed as individual manuscripts are placed within their complex historical and material contexts.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST881 CHRISTIAN MANUSCRIPT CULTURE, HISTORY881 CHRISTIAN MANUSCRIPT CULTURE

RELIGION887S - Introduction to Rabbinic Literature

Course Description
Selected studies in Jewish material culture and problems in Jewish religious and intellectual history.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RELIGION888S - Biblical Hebrew Advanced Prose Syntax

Course Description
A doctoral seminar in reading biblical Hebrew prose, for students already advanced beyond the intermediate level. For those who are not doctoral students, permission of the instructor is required. Open only to Religion PhD or Divinity School ThD students. Prerequisite: Old Testament 760, 761, and 860, or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION889 - Religion, Restrictions, and Violence

Course Description
An examination of the historical roots and current manifestations of religiously-justified violence and disenfranchisement, with a focus on the Abrahamic traditions (Judaism, Christianity, and Islam). The violence treated will include the expressly physical as well as the more insidiously existential, including political and cultural marginalization. Major loci of exploration will include gender and sexuality; Israel-Palestine, and the intersection of contemporary identities. Topics include the nature of extremisms within each tradition, the challenges of assimilation and 'modernity,' and the role and nature of citizenship and territory. This graduate version of the course will be distinguished by the length of readings, length of writing assignments, and nature of final paper.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RELIGION890 - Special Topics in Religion

Course Description
Graduate level special topics in religion. Topics may include Early Christianity and Deuteronomy, among others. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION890S - Special Topics in Religion

Course Description
Graduate level special topics in religion. Topics may include Early Christianity and Deuteronomy, among others.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION895S - Medieval Jewish Biblical Interpretation

Course Description
A survey of medieval Jewish exegetical texts, read in the original Hebrew, focussing on both narrative and legal matters. We will concentrate on the Jewish medieval interpretation of the Akedah (the binding of Isaac) and on how these commentators 'reconciled' the different Torah laws concerning slavery. Reading ability of unpointed Hebrew texts is expected; this course is intended to extend historically the texts studied in Religion 810, which is helpful as a prerequisite.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION900S - African American Religion Through the Literary Imagination

Course Description
In this course, we will examine and trouble the notion of African American religion by reading different genres of literature. By engaging slave narratives, autobiography, fiction, and the critical essay, the aim of the course will be to re-imagine categories that are associated with black religion: piety, spiritual, opacity, trauma, liberation, transgression, anguish, intersectionality, and the 'afterlife of slavery.' Two general ideas will motivate the direction(s) of the course. For one, black religiosity is not reducible to institutional forms like the church. Secondly, any endeavor to study black piety, or blackness more generally, requires multiple genres and approaches.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS900S AFRICAN AMERICAN RELIGION/LIT, ENGLISH900S AFRICAN AMERICAN RELIGION/LIT

RELIGION905S - Advanced Syriac

Course Description
Reading and study of Early Syriac Christian tests (2nd-7th) with a general introduction into scholarship on Syriac Christianity. Combination of class work and individual reading.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION910S - Ethnography of Religion

Course Description
Examines emergence of ethnography as major research methodology in study of religion. Considers how anthropology has historically constructed a 'religious' subject and how contemporary ethnographic theory and praxis are articulated by postcolonial and postmodern critiques representation. Includes proto-ethnographic accounts of religious practice from the 16th and 17th century in Europe and Asia, colonial documentation so-called tribal communities, and ethnographic studies of contemporary religious settings ranging from women's storytelling in Himalayan foothills to Cuban Catholicism in United States.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION911S - Religious Material Culture in Theory and Practice

Course Description
Examines prevailing theories and methods of studying objects, spaces, images, and the senses as primary forms of evidence for understanding religions.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST911S RELIGIOUS MATERIAL CULTURE, CLST729S RELIGIOUS MATERIAL CULTURE

RELIGION912S - Theorizing Religion

Course Description
Late nineteenth- and twentieth-century theories, interpretations, and approaches to the study of religion.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RELIGION913S - Comparative Ritual Theory

Course Description
Ritual theory is an essential part of the study of religion. This graduate course focuses on contemporary theories of ritual, with an emphasis on the global contexts of diverse conceptualizations of ritual life. We begin with classical accounts of ritual (Mauss, Durkheim) and some of the most influential theories today (Turner; Douglass; Rappaport). We discuss sociological analysis of ritual that takes into account of everyday social interactions (Goffman; Bellah; Randall), and the post-colonial and post-scientism perspectives that add political and epistemological dimensions (Chakrabarty; Latour). We pay special attention to ritual theories that compare ritual life in different societies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION914S - Modernity of Religion

Course Description
Emergence and form of 'religion' in modernity; religions in the context of multiple modernities; exploring both conceptions of 'religion' and 'modernity' in broadest formulations including particular understandings of culture, power, self and the cosmos; examines cultural grammars, politics, epistemologies, technologies, histories and self-accounts that mark religion-in-modernity drawing on multiple global experiences.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION916 - Topics in the Study of Japanese Religions

Course Description
An In-depth examination of selected topics in the study of Japanese religions. Advanced Japanese or instructor permission required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION919S - Transnational Confucianism

Course Description
This course examines the multiple transnational developments of Confucianism as religious, political, and cultural traditions from the eighteenth century to the twentieth-first century, both in Asia and beyond. Historically Confucianism has taken a strong hold in East Asia for centuries, leaving distinct legacies in China, Korea, and Japan. But it has also been having significant impact in Southeast Asia, especially in Vietnam, Singapore, Indonesia, and Malaysia. In the turn towards the twentieth-first century, we see new developments not only in countries where Confucianism has previously left strong impressions, but also in other parts of the world, such as the United States.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES919S TRANSNATIONAL CONFUCIANISM

RELIGION920S - Ibn Arabi's Sufism: Islamic Theoretical Mysticism

Course Description
Ibn Arabi (1165–1240) is the greatest of all Muslim mystics and the best representative of the 'illuminative phase' of Islamic philosophy. This course explores his methodology (divine speech, deiformity, and names & relations), ontology (wahdat al-wujud, nondelimitation, imagination, and the barzakh), things and realities (fixed entities, the reality of realities, and entification), the return (the circle of existence, stages of ascent, and the two commands), and human perfection (the station of no station, perfect man, and divine presences). It includes a discussion on his most famous work Fusus al-Hikam ('The Bezels of the Wisdoms') which contains the basic principles of his thought.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION921 - Issues in Contemporary Systematic Theology in America and England

Course Description
The goal of this seminar is to offer exemplary readings in contemporary systematic theology in America and England. However, instead of attempting a comprehensive overview by covering all voices that make up contemporary theology, this seminar follows a distinct path in the contemporary discussion: Trinitarian theology between scripture, philosophy, and culture. Prerequisite: Christian Theology 755

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RELIGION925S - Exegesis of the Hebrew Text of the Hebrew Bible/Old Testament

Course Description
The books studied will vary from semester to semester—Exodus, Deuteronomy, Biblical Historical Texts, Amos, Psalms, Song of Songs. Can be taken more than once for credit, as topics vary from one semester to another. Prerequisite: two years of biblical Hebrew.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION930S - Death and Dying in Late Antiquity

Course Description
Death, in antiquity as in the present era, sat at the intersection of a wide range of discourses. Medical doctors, for example, sought to avert it, jurists to mitigate its impact upon family relations and the flow of capital, philosophers and theologians to prescribe approaches to it, and bishops and other religious professionals to create rituals by which to assist the departed's transition into the afterlife and to channel the grief of her surviving loved ones. This seminar aims to locate death at the intersection of material and literary culture, liturgical practice and economic impact upon ancient Christian communities.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST940S DEATH AND DYING IN LATE ANT

RELIGION934S - Synoptic Gospels in Greek

Course Description
Critical, historical approach to the Synoptic Gospels, with a special focus on the Synoptic Problem. In-depth examination of the history of the Synoptic Problem; detailed study of contemporary approaches and solutions to the Synoptic Problem; discussion of the role played by Synoptic Problem studies in New Testament scholarship, including Historical Jesus studies, redaction-criticism, textual criticism and literary-critical approaches. Prerequisite: two years of Greek or the equivalent. Doctoral students only.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RELIGION935S - Gospel of John in Greek

Course Description
Discussion and analysis of the Gospel of John with a special focus on historical-critical approaches, including authorship, date, sources, theology, literary analysis, and relationship to other early Christian works. Prerequisite: two years of Greek or the equivalent. Doctoral students only.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION936S - Passion Narratives in Greek

Course Description
This course offers a critical, historical approach to the Passion and Resurrection Narratives in the Gospels of Matthew, Mark, Luke, John and Peter. Participants in the course will analyze the texts from a variety of perspectives, focusing especially on source-criticism, form-criticism, redaction-criticism, textual criticism, feminist, and literary-critical approaches. This is a doctoral-level course and it involves studying the primary texts in Greek.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION937S - Historical Jesus

Course Description
Critical exploration of research into the Historical Jesus, including history of scholarship, historical context, source materials, methods and criteria, non-canonical texts, Birth Narratives, miracle accounts, eschatology, the death of Jesus, and the resurrection stories. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RELIGION946S - Comparative Medieval Philosophy (Al-Farabi, Avicenna, Al-Ghazali, Averroes, Maimonides, Aquinas)

Course Description
The interaction between major philosophers of three Abrahamic religions in the medieval period. Maimonides as the representative of Jewish philosophers. Thomas Aquinas as the representative of Christian philosophers. Al-Farabi, Avicenna, Al-Ghazali and Averroes as the representatives of Muslim philosophers. Translation movement from Arabic to European languages. Theological subjects, philosophical approach. Epistemology, ontology, teleology, and eschatology. Major themes: Causality, God (existence, attributes and actions), world (seen an unseen), creation, soul, prophesy and revelation, resurrection, predestination and free will, theoretical and practical reason.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

RELIGION947S - Comparative Religious Studies (Case Study of Judaism, Christianity & Islam)

Course Description
The course offers a general framework and methodology of comparative religious studies. It is a case study of Judaism, Christianity, and Islam. The key elements of discussions are: faith, belief and theological continuity in the pre-modern era; Scriptures of the Hebrew Bible, Old and New Testament, and the Qur'an; God's essence, attributes and deeds; monotheism and Trinity; free will and predestination; creation and original sin; prophets and biblical figures; ethical orientation toward life; reason and revelation; and eschatology: life and death, end time, afterlife, salvation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ETHICS947S COMPARATIVE RELIGIOUS STUDIES

RELIGION952S - Doctoral Seminar in Early Christianity

Course Description
This seminar is intended for students in the PhD and ThD programs. It will provide a close examination of important early Christian texts in the original language. The seminar will also give attention to the social, intellectual, and religious contexts of the ancient documents as well as grammar, rhetoric, and theological argument. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RELIGION996S - Teaching in Religion

Course Description
Course specifically designed for students in Graduate Program in Religion. Offers students chance to engage with different faculty members on methods and strategies concerning classroom teaching. Students will be asked to reflect on their own classroom experience and student evaluations of their teaching. Credit/ No Credit only. Consent of instructor required.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

RELIGION630-11 - Exegesis of the Greek New Testament II: The Synoptic Gospels

Course Description
Concentration on the 'classical' methods of studying the first three gospels: source criticism, form criticism, and redaction criticism. Some attention to textual criticism. Students expected to become proficient in using the Greek synopsis. Prerequisite: two years of Greek or the equivalent. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(R) Research

RIGHTS527S - Islam and Human Rights

Course Description
The main focus of the course is inquiry about possibility of human rights for Muslims in the modern time. The notion of human rights is represented by the United Nations documents, while Islamic teachings are divided into Islamic ethics and Islamic law. The former contains universal values such as dignity, justice, mercy, love, and freedom. The latter, in its traditional iterations, suffers from issues of gender discrimination, religious intolerance, restriction of religious freedom, the problem of apostasy, and violent punishments. Students will survey major conservative and reformist Muslim approaches to human rights to foster the development of critical analytic and comparative skills.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION527S ISLAM AND HUMAN RIGHTS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (R) Research, (CZ) Civilizations, (SS) Social Sciences

RIGHTS539S - Queer China

Course Description
Examines queer discourses, cultures, and social formations in China, Greater China, and the global Chinese diaspora from the late imperial period to the present. Course will focus on cultural representations, particularly literary and cinematic, but will also consider a wide array of historical, anthropological, sociological, and theoretical materials. Not open to students who have taken Asian and Middle Eastern Studies 439.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES539S QUEER CHINA, CULANTH539S QUEER CHINA, GSF502S QUEER CHINA, LIT539S QUEER CHINA, VMS539S QUEER CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

RIGHTS642 - Global Inequality Research

Course Description
Engagement of vertically integrated research teams in projects exploring racial and ethnic disparities exhibited and expressed in six arenas: employment, wealth, health, political participation, education, and arts and culture. Each team will produce a major paper that will qualify for submission to a refereed journal in the area relevant to the focus of the study.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS642 GLOBAL INEQUALITY RESEARCH, ECON541 GLOBAL INEQUALITY RESEARCH, SOCIOL642 GLOBAL INEQUALITY RESEARCH, POLSCI642 GLOBAL INEQUALITY RESEARCH, PUBPOL645 GLOBAL INEQUALITY RESEARCH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SS - (SS) Social Sciences

RIGHTS660 - Global Mental Health

Course Description
Examination of global mental health from perspectives of culture, public health, epidemiology, human rights, policy, and intervention. Disciplines include cross-cultural psychiatry, medical anthropology, public mental health, and economics. Topics include ethics, stigma, cross-cultural classification of mental health, ethnopsychology, trauma, violence, disasters, and displacement. Populations include children, ethnic minorities, refugees, survivors of complex emergencies, and persons with chronic disease. Course highlights mixed-methods approaches to research and intervention evaluation. Designed for graduate students & advanced undergraduates. Prior research methods course recommended.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GLHLTH660 GLOBAL MENTAL HEALTH, PSY611 GLOBAL MENTAL HEALTH, CULANTH611 GLOBAL MENTAL HEALTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, NS - (NS) Natural Sciences

ROMST501S - Methods and Theories of Romance Studies

Course Description
Provides students in any PhD track of the department of Romance Studies with fundamental training in both general literary theory and in the specific methods of romance criticism.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT540S METHODS THEORIES ROMANCE STDS

ROMST504S - When Fiction Meets History

Course Description
Investigation of key concepts along the fact/fiction & literature/history borders. Debate of their changing meanings, functions, and social significance in Francophone contexts during variety of periods, when fiction represents experimental thinking, and literature involves writing technologies. Focus on several topics: Cosmography or the Idea of the Universe, Human Passions or Love vs. Hatred, Human Relations: Dependence & Independence. Major writers/artists include Christine de Pizan, Héloïse, Abélard, Rousseau, Alain Chartier, Memmi, La Boétie, Sarraute. Work culminating in research or creative projects. Taught in English, with French preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH505S WHEN FICTION MEETS HISTORY, HISTORY505S WHEN FICTION MEETS HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, WR - (WR) Writing: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ROMST505S - Visual Studies from the Global South

Course Description
This seminar shifts the geography of critical theory, introducing interdisciplinary approaches to visual culture and art formulated outside the northern academies of Europe and the United States. Diverse readings introduce how the visual is constituted in sites that have endured colonialism and globalization. Specific topics include: word and image; space, place, and site; media and new technologies; indigenous and Afro-diasporic philosophies; and the raced and gendered body.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST505S VISUAL STUDIES GLOBAL SOUTH, VMS505S VISUAL STUDIES GLOBAL SOUTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ROMST510S - Feeling and Protest

Course Description
Detractors of social movements deploy critiques of irrationality—as signs of unchecked emotions leading to violence—to undercut their credibility. They promote the suspicion that grassroots protests are incompatible with reason. As a result, social movements bear the burden of countering this narrative to establish a credible voice. Rather than an unconscious symptom, many social movements have historically engaged with feelings to organize political action. Beyond indigitation, disgust, desire, fatigue, solidarity, and sensory modalities like sound, visuality, and smell are used to advance their message. In this seminar we will study various social movements from the 20th and 21st centuries global Hispanophone to understand how affect mediates these struggles.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
SPANISH510S FEELING AND PROTEST, LIT511S FEELING AND PROTEST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ROMST521S - Anthropology and History

Course Description
Recent scholarship that combines anthropology and history, including culture history, ethnohistory, the study of mentalite, structural history, and cultural biography. The value of the concept of culture to history and the concepts of duration and event for anthropology. Prerequisite: major in history, one of the social sciences, or comparative area studies; or graduate standing.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH501S ANTHROPOLOGY AND HISTORY, HISTORY572S ANTHROPOLOGY AND HISTORY

ROMST522S - Africa, Cuba, Brazil: Great Powers of the Black Atlantic

Course Description
Explores shared cultural history of three great populations separated by oceans but linked by slave trade. Course will offer lively, mutually transformative dialogue in religion, music, and political ideas. This case study in the Africanization of the Americas and the Americanization of Africa challenges a range of conventional assumptions about transnationalism, race, class, gender, and their artistic expression.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS610S AFRICA, CUBA, BRAZIL, CULANTH610S AFRICA, CUBA, BRAZIL, HISTORY610S AFRICA, CUBA, BRAZIL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ROMST525S - Global South Feminisms

Course Description
This course delves into the heroic histories of some of the most prominent women voices across the Global South and the various ways they challenge normalized and heteronormative structures of society. From slave revolt leaders Carlota in Cuba and Solitude in Guadeloupe, to the seminal Borderlands=La Frontera and contemporary film Mariannes Noires, we will explore and discuss some of the most daring accounts of women engaging with power from emancipation in the 19th century to the 1960s civil rights movements to the #MeToo era.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ROMST526S - Columbus: A Global History

Course Description
This seminar returns to the global framework of Columbus's encounters with what would come to be called the New World. Students will study medieval conceptions of the world in maps, cosmographies, and travel literature as well as developments in China and the Americas before 1492. Our central focus will be texts by Columbus and his contemporaries: Peter Martyr d'Anghiera, Amerigo Vespucci, Martin Waldseemüller, Bartolomé de las Casas, Peri Reis, Mehmed el-Su'udi, and Jacopo ha-Kohen. Attention will be given to slavery, colonization, evangelization, prophecy, apocalypticism, and resistance. We will also explore the economic and intellectual consequences of Columbus's voyages across time.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY526S COLUMBUS: A GLOBAL HISTORY, MEDREN554S COLUMBUS: A GLOBAL HISTORY, RELIGION524S COLUMBUS: A GLOBAL HISTORY, CULANTH527S COLUMBUS: A GLOBAL HISTORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations

ROMST531S - Premodern Times: A User's Manual

Course Description
How has thinking with premodern cultures shaped criticism? Seminar explores aspects of medieval Euro-Mediterranean cultures as perennial objects of thought, investigating the ways the surviving writing and images mark key theoretical models. Inquiry proceeds by pairs of works. We debate a mode of thinking by examining critical essays with premodern works. Writers include Christine de Pizan, Alain Chartier, troubadour poets; critics such as Agamben, Boucheron, Memmi, Schlanger. Modes such as gender & sexuality; visual culture; political thought; multilingual poetics and practice. Works in translation; readings in original language and preceptorial meetings for majors/graduate students.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH530S PREMODERN TIMES, MEDREN642S PREMODERN TIMES, LIT541S PREMODERN TIMES, ARTHIST532S PREMODERN TIMES, HISTORY508S PREMODERN TIMES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ROMST532S - Comparative Modernisms

Course Description
This course investigates the debated term modernism. We will explore a wide range of critical works on periodization, avant-garde movements, irony, stream of consciousness, and other key terms, to examine several major literary works of modernism, including selections from Woolf, Rilke, Marinetti, Pirandello, Musil, Joyce, and Kafka. Each student will select a representative work from a national literary tradition to contextualize for the class and research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN532S COMPARATIVE MODERNISMS, LIT532S COMPARATIVE MODERNISMS, GERMAN535S COMPARATIVE MODERNISMS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance

ROMST532SP - Comparative Modernisms Preceptorial

Course Description
A preceptorial, in Italian, requiring concurrent enrollment in Romance Studies 532S or Italian 532S. Enrollment allows the course to count toward the language requirement for the Italian major or minor. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

Crosslisted Courses
ITALIAN532SP COMPARATIVE MODERNISMS PRECEPT

ROMST540S - Memory and Documentary Cinema in Latin America

Course Description
Course focuses on work of several leading Latin American filmmakers from Brazil, Chile, Argentina, and Cuba. Explores problems such as construction of memory in the wake of repressive dictatorships, relationship between revolutionary imagination and urban decay in present day Cuba, cinema's potential as a tool for cross-cultural explorations of memory and time, including relationship between past and present and our understanding of 'contemporary.'

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
VMS540S MEMORY/DOC CINEMA LATIN AMER, DOCST540S MEMORY/DOC CINEMA LATIN AMER, LIT544S MEMORY/DOC CINEMA LATIN AMER, LATAMER540S MEMORY/DOC CINEMA LATIN AMER, CINE540S MEMORY/DOC CINEMA LATIN AMER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ROMST540SP - Memory and Documentary Cinema in Latin America Preceptorial

Course Description
A preceptorial in Spanish, requiring concurrent enrollment in Romance Studies 540S or Latin American Studies 540S. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

Crosslisted Courses
LATAMER540SP MEM/DOC CINEMA LAT AMER PRECPT

ROMST545S - Epic and Exile: Classical Themes, Renaissance Variations

Course Description
Examines Renaissance epic poetry in relationship to themes of exile, empire, and collective identity. Studies the generic traditions of epic and romance, practices and modes of classical imitation, and transformation of epic through early modernity. Navigates the sociopolitical histories that have shaped epic poetry over time, particularly concerning political and religious conflicts, geographical and global contact, scientific innovations, and debates about women and gender. Primary readings include Virgil's 'Aeneid,' Lucan's 'De bello civile,' Dante's 'Purgatorio,' Tasso's 'Gerusalemme Liberata,' Camões's 'Os Lusíadas,' and Spenser's 'Faerie Queene.'

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN545S EPIC AND EXILE, LIT585S EPIC AND EXILE, MEDREN645S EPIC AND EXILE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ROMST565S - Global Critical Race Theory and History: Brazil and the USA

Course Description
Critical Race Theory emerged in US law schools in the 1980s and has inspired young scholars and activists with its focus on the systemic nature of racism entrenched within the U.S. judicial system. Yet CRT has also been relentlessly modern and focused on the U.S.A. Given varying dynamics of racial subalternization and divergent legal systems, how is one to grasp the distinctive features as well as shared similarities between systems of racial domination in the USA and Brazil, two core regions of the New World African Diaspora? More broadly, how might one encompass 'race' and 'race-like' forms of domination in other societies in light of the sweep of history over the past millennia?

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY565S GLOBAL CRITICAL RACE THEORY, AAAS565S GLOBAL CRITICAL RACE THEORY, CULANTH565S GLOBAL CRITICAL RACE THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

ROMST570S - Philosophy in Motion: Corporeality, Gesture, and Movement in Modern Thought

Course Description
In an age where the circulation of knowledge across media is paramount, what role can be ascribed to the mobile body? This seminar will investigate the central role played by the body, movement, and gesture in modern French, Caribbean, and African philosophy. We will examine their relation to questions of aesthetics and politics, as well as theories of community and practices of resistance. We will explore the body as an epistemological interface producing, encoding, and transmitting knowledge. We will also work interdisciplinarily in the fields of cinema and performing arts, addressing each as forms of intelligibility in motion. Taught in English with an optional preceptorial.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH570S PHILOSOPHY IN MOTION, AAAS570S PHILOSOPHY IN MOTION, CULANTH571S PHILOSOPHY IN MOTION, DANCE571S PHILOSOPHY IN MOTION, LIT570S PHILOSOPHY IN MOTION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ROMST576S - Theory & Aesthetics: Roland Barthes

Course Description
How do philosophers read and make sense of literary texts, movies, works of art and other philosophers? This course elucidates key conceptual and hermeneutic articulations under girding a philosophical signature and delineate the status of aesthetic objects in theory. It explores Roland Barthes' thought through 4 of his key theoretical moves: death of the author, reality effect, punctum, the neutre and the ground upon which he deployed them: the realist novel, techniques of cinema & photography, political antagonism, queer subjectivity. Texts to be read in English translation; students encouraged to consult the French originals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT576S THEORY & AESTHETICS, ISS576S THEORY & AESTHETICS, VMS576S THEORY & AESTHETICS

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ROMST577S - Edward Said: Theory, Politics, Culture

Course Description
This seminar will explore Edward Said's oeuvre in depth. Said's work consciously bypassed the borders of disciplinarily and the strictures of genres. We will focus on re-tracing the evolution of his thought through a close interpretation of the relationship between theoretical elaboration, political intervention and cultural production in his own work. In doing so, we will focus on the theoretical and historical genealogies of his seminal work Orientalism, his multiple writings on Palestine, and his views on the intellectual's vocation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES577S EDWARD SAID, LIT577S EDWARD SAID

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

ROMST580S - Sylvia Wynter and the Question of Caribbean Philosophy

Course Description
A course on Sylvia Wynter, alongside an archipelago of Caribbean oeuvres by Firmin, Césaire, Fanon, Glissant, etc. How to map Caribbean philosophy, when it has long been critical of modern philosophy as a discourse of critical exceptionalism; a mode of bourgeois rationalist production dividing labor between the intellectuals and the workers? Wynter makes use of a Latin American paradigm of autopoiesis and embodied cognition, proposing a 'ceremony able epistemologically to emancipate humankind's knowledge of the physical and purely biological levels of reality from our order-stabilizing / legitimating symbolic codes.' More readings by McKittrick, Henry, Bogues, Casimir, Chancy, Nesbitt, etc.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS581S CARIBBEAN PHILOSOPHY, LIT581S CARIBBEAN PHILOSOPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

ROMST590 - Topics in Romance Studies

Course Description
Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ROMST590S - Seminar in Romance Studies

Course Description
Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ROMST590SP - Special Topics in Romance Studies - Preceptorial

Course Description
A preceptorial in French, Italian, Portuguese or Spanish requiring concurrent enrollment in Romance Studies 590S. Further information available from instructor.

Grading Basis
No Grade Associated

Course Typically Offered
Occasionally

Units

Min Units:
0

Max Units:
0

ROMST591 - Independent Study

Course Description
Individual study in a field of special interest, under the supervision of a faculty member, resulting in a substantive paper or written report containing significant analysis and interpretation of a previously approved topic. For students in the Master of Arts in Teaching Program.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

ROMST612S - Theories of the Image: The Image in Walter Benjamin

Course Description
Returning to Walter Benjamin's Art Work essay and its various sources and revisions, this course will discuss recent engagements with Benjamin's work in cinema, photography, and visual and media studies and will attempt to understand the role and functions of the faculty he coins 'the mimetic' in modern culture. Readings will be drawn from the English translation of Benjamin's Selected Writings, volumes 1-4, and including his work on photography, history, surrealism and his reviews of writers such as Charles Baudelaire. Readings will also include some of Benjamin's own primary sources, such as the writings of Kracauer as well contemporary discussions of Benjamin's work in academic journals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT612S THEORIES OF THE IMAGE, GERMAN512S THEORIES OF THE IMAGE, VMS612S THEORIES OF THE IMAGE, CULANTH500S THEORIES OF THE IMAGE, CINE612S THEORIES OF THE IMAGE

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ROMST618S - Theories of the Visual

Course Description
Examines the 'visual' as concept of major concern that traverses the debates of the modern and postmodern periods. Expands from the technological (painting, photography, cinema, television, and computation) to the theoretical and philosophical interpretation of visual culture. Examines major periods: from philosophical critique of visuality in 19th and early 20th c., to the height of cultural theory and criticism up until the 1970s; from the late 20th c. to the contemporary period that includes debates that expand our understanding of visual experience. Ends with introducing work that aims at decentralizing Western thought in the debate.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT618S THEORIES OF THE VISUAL, ARTSVIS618S THEORIES OF THE VISUAL, CINE618S THEORIES OF THE VISUAL, CMAC618S THEORIES OF THE VISUAL, VMS618S THEORIES OF THE VISUAL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

ROMST690 - Topics in Romance Studies

Course Description
Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ROMST690S - Seminar in Romance Studies: Special Topics

Course Description
Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

ROMST700S - Theories and Techniques of Teaching Foreign Languages

Course Description
A survey of approaches to foreign language teaching, an introduction to the theoretical notions underlying current trends, and a language-specific practicum.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

ROMST705S - How to do Research Like an Artist: Contemporary Methods, Theories, and Practice

Course Description
This seminar presents research methodologies employed by contemporary artists who are active in major global movements including conceptualism, performance, environmental, and social practice art. At the border between theory and practice, the course invites students to experiment with these methods, and to consider how their academic study of art history and visual studies can learn from these research-based artistic practices. Final research projects combine scholarly research on these methodologies with experimental uses of them. Students that enroll in this course at the graduate level have differentiated assignments and assessment.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
ARTHIST705S RESEARCH LIKE AN ARTIST

ROMST711S - Mapping Jewish Modernism

Course Description
Students research Jewish modernism through questions of geography and movement, pointing to the many places where modern Jewish art has been created and the experiences of migration, exile, dislocation, diaspora, and resettlement that shaped this work. We discuss the varieties of ways that different art forms, including literature, theater, music, art, film, architecture, and dance, can be mapped. We analyze mapping in terms of the movements of people (artists, authors, and directors), of objects (paintings, works, and films), and within the works themselves. The extensive work with the Rubenstein Library leads to projects that contribute to an exhibit in Perkins Library and a digital site.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN711S MAPPING JEWISH MODERNISM, JEWISHST711S MAPPING JEWISH MODERNISM, ITALIAN711S MAPPING JEWISH MODERNISM

ROMST712 - Race, Class, and Family in Contemporary Literature: Journeys, Generations, and Translations

Course Description
An opportunity to study with the Italian author Igiaba Scego, this English-language course explores representations of race, class & generations in contemporary fiction, with an emphasis on translated fiction. The course has 3 parts: 1) Analysis of Scego's work, which is crucial to debates on migration, decolonization, racism, feminism & translation; 2) read Italian and Brazilian authors to examine the intersection of color and class that cross Italy & Brazil from the colonial period to today, including the journeys & interactions between parents, siblings; 3) discussion of Scego's just-translated 'The Color Line,' which moves between the U.S., Italy, and Somalia, & Final projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN712 RACE, CLASS, & FAMILY IN LIT, PORTUGUE712 RACE, CLASS, & FAMILY IN LIT

ROMST713S - Svevo and World Literature

Course Description
Italo Svevo wrote some of the most important modern Italian novels, like 'Zeno's Conscience.' Through considerations of Svevo with other writers such as Darwin, Freud, Kafka, Pirandello, Proust, Shakespeare, and Woolf this class examines Svevo in his various contexts, including Italian, Austrian, German, Jewish, Triestine, European, and Modernist to understand the strengths and weaknesses of classifications according to language, religious or cultural background, nation, education, and literary movement. Graduate students will develop their critical understanding of 'world literature' through work on secondary readings and write a final conference paper related to their research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ITALIAN713S SVEVO AND WORLD LITERATURE, GERMAN713S SVEVO AND WORLD LITERATURE, JEWISHST713S SVEVO AND WORLD LITERATURE, LIT713S SVEVO AND WORLD LITERATURE

ROMST715 - Cultural Memory

Course Description

Investigates invention, reconfiguration, and use of literary fictions over time. Examines major theoretical models: Assmann on cultural memory; LeGoff on history vs. memory; Rancière, Agamben on Temporality and anachrony; Benjamin, Bon on media and transmission. Readings from modern, premodern, and contemporary fiction, crossing genres and modes—narrative, poetic, dramatic, verbal, pictorial, cinematographic (including e.g. Hugo, Villon, Glissant, troubadour poetry, Aragon, Pichette, Christine de Pizan, Dreyer, Artaud, Bernard, Lamartine, Chartier, Lurçat, the Bayeux tapestry). Research projects to be developed with collaborators at European universities and archives. Taught in English.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

FRENCH715 CULTURAL MEMORY, HISTORY715 CULTURAL MEMORY, LIT715 CULTURAL MEMORY

ROMST750S - Gender and Aesthetic Theory

Course Description

This seminar asks about the historical role played by feminine figures—muses, maidens, mothers, lovers—in the construction of aesthetic epiphanies and metamorphoses. The notion of Woman as a conduit for inspiration has a long theological, philosophical and literary tradition, beginning with the early Christian topos of the Virgin Mary as an 'aquaduct of grace.' We will interrogate this topos in search of a different and deeper understanding of what it has meant, historically, to be transformed by a work of art. Authors to be explored include Dante, Rousseau, Goethe, Schopenhauer, Wagner, Bachmann, Lacan, Irigaray, Kristeva, Kittler, and Latour. Discussions and readings in English.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

GERMAN750S THE ETERNAL FEMININE, LIT750S THE ETERNAL FEMININE, GSF750S THE ETERNAL FEMININE

ROMST755S - Dissertation and Career Prep for 5th and 6th year Graduate Students

Course Description

This course explores strategies for dissertation research and writing. Students will focus primarily on a single chapter which will be workshopped during the semester. In addition to dissertation writing, the course addresses other aspects of the academic profession such as cover letter and CV writing and the process of job applications.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

ROMST760S - The Concept of the Symbol

Course Description
There is widespread agreement that symbols are crucial for our understanding of ourselves as humans and as humanists, but there is little agreement about what symbols actually are. This question has acquired new urgency with the development of technologies that allow computers to freely yet mechanically generate symbolic strings. The course provides an introduction to the various concepts of the symbol—from the Eucharist to French and Russian symbolism, from German and English Romanticism to the invention of semiotics, from symbolic logic to the Lacanian symbolic order—that have historically underpinned our western relationships to aesthetic practice and technological innovation.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN760S THE CONCEPT OF THE SYMBOL, LIT752S THE CONCEPT OF THE SYMBOL

ROMST790S - Topics in Romance Studies

Course Description
A cycle of seminars that explores a theoretical problem cross-culturally through two or more Romance traditions: French and Francophone, Italian, Portuguese and Luso-Brazilian, Spanish and Latin American.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ROMST791 - Independent Study

Course Description
Independent study; directed reading and research in area unrepresented by regular course offerings.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

ROMST826S - Contemporary Genre Fiction: The Global Novel

Course Description
This course examines the emergence of novels in various parts of the globe that address a readership beyond their respective nations or regions of origins, sometimes even beyond the novelist's national language. Under the heading of 'Contemporary Genre Fiction,' we will look particularly at adaptations and transformations of sub-genres of the novel in different contexts. Among the genres we will consider are: detective novel; science fiction; novel of manners; romance; historical and philosophical novel.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH826S CONTEMPORARY GENRE FICTION, LIT826S CONTEMPORARY GENRE FICTION

ROMST827S - The Global Novel: Post, What?

Course Description
This course examines the recent emergence of novels in various parts of the globe that address a readership beyond their respective nations and regions of origins, sometimes even beyond the novelist's national language. These novels make a point of declaring that the form of the novel traditionally organized around the experience of a representative individual is now obsolete. Critics and scholars tend to describe these novels as displaying specific forms of 'post-ness,' whether post-modern, post-human, post-apocalyptic, post-revolutionary, and post-exotic.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENGLISH827S THE GLOBAL NOVEL: POST WHAT?, LIT827S THE GLOBAL NOVEL: POST WHAT?

ROMST850S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, LIT850S DELEUZE: CINEMA & PHILOSOPHY, VMS850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

RUSSIAN505 - Semiotics of Culture

Course Description
The theory of literature, arts, ethnicity, modernity, and culture from a cross-cultural perspective. Texts includThe theory of literature, arts, ethnicity, modernity, and culture from a cross-cultural perspective. Texts include the critical works of Lotman and the Tartu School, Bakhtin, Eco, Kristeva, Voloshinov, Medvedev, Barthes, Todorov, Jakobson, Ivanov, and Sebeok, as well as authentic culture texts from Slavic and European traditions. Research project required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST505 SEMIOTICS OF CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RUSSIAN506S - Semiotics and Linguistics (DS4)

Course Description
A survey of modern semiotics, particularly the works of C. S. Peirce, Roman Jakobson, Yury Lotman, Roland Barthes and Umberto Eco. Analysis of semiotic works directly related to questions of the construction of cultural and linguistic meaning, and linguistic sign theory. Emphasis on semiotic theories from a multi-cultural perspective, especially the European, Tartu, Soviet, and American schools. Research project required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST506S SEMIOTICS AND LINGUISTICS

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (R) Research, (ALP) Arts, Lit & Performance, (SS) Social Sciences

RUSSIAN508 - Legal and Business Russian

Course Description
Analysis of Russian language and culture in the area of legal studies and conducting business in or with Russia and other Commonwealth of Independent States countries. Primary materials include legal codes, law journals, contracts, advertising, financial documents, redactions of the Soviet and Russian constitutions (1905-present). Specific attention given to the analysis of evolution of property and ownership legislation, the workings of the legislative, executive and judicial branches of the Russian Federation government and contrastive analysis of Soviet, Russian (and where relevant Western) systems of jurisprudence. Taught in Russian. Prerequisite: Russian 302S or equivalent.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, CZ - (CZ) Civilizations

RUSSIAN523 - Dostoevsky

Course Description
Introduction to life, works, and criticism. Readings include: Crime and Punishment, The Idiot, and The Brothers Karamazov. Taught in English. Readings in Russian.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (W) Writing, (ALP) Arts, Lit & Performance

RUSSIAN525 - Tolstoy and the Russian Experience

Course Description
Historical approach to Tolstoy's depictions of major societal and ethical issues (e.g., war, peace, marriage, death, religion, relationships). Culture of salons, print culture, censorship, and changing political climate. Central questions on the relationship of fiction and history: uses of fiction for understanding history and dangers of such an approach. Readings include selected fiction of Tolstoy, excerpts from journals and letters, and critical and historical accounts of nineteenth-century Russia. Similar to Russian 325 but requires additional assignments.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RUSSIAN527S - Chekhov

Course Description
Drama and prose works. Readings in Russian.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

RUSSIAN528S - Bunin: Mystery of the Russian Soul and Metaphysical Memory

Course Description
Same as Russian 328S, but includes additional assignments. Taught in Russian. Readings in Russian. Intensive critical component.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

RUSSIAN530 - Apocalyptic Visions and Diabolic Drama: The Works of Mixail Bulgakov

Course Description
Critical analysis of Bulgakov's short stories, novellas, plays and novels. In-depth exposure to major critical works on Bulgakov and influential figures. Taught in English. Readings in English and Russian.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN530S - Apocalyptic Visions and Diabolic Drama: The Works of Mixail Bulgakov

Course Description
Critical analysis of Bulgakov's short stories, novellas, plays and novels. In-depth exposure to major critical works on Bulgakov and influential figures. Taught in Russian. Readings in Russian.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

RUSSIAN533 - Geopolitics and Culture: How Russian Culture Changed the World

Course Description
Examination of Russian contributions to advancements in the sciences, mathematics, and the arts (visual/textual/musical). Special attention is paid to the contributions of Mendeleev (chemistry), Vygotsky and Luria (cognitive and developmental psychology/neuroscience), Lobachevsky (non-Euclidean geometry), Sakharov (nuclear physics, dissident), Kandinsky and Filonov (visual arts), Rachmaninoff, Shostakovich, Stravinsky, Prokofiev (composers), Zamiatin, Jakobson, Lotman, Bakhtin, Voloshinov (semiotics, theories of artistic texts).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH533 GEOPOLITICS AND CULTURE, PUBPOL508 GEOPOLITICS AND CULTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RUSSIAN533S - Geopolitics and Culture: How Russian Culture Changed the World

Course Description
Examination of Russian contributions to advancements in the sciences, mathematics, and the arts (visual/textual/musical). Special attention is paid to the contributions of Mendeleev (chemistry), Vygotsky and Luria (cognitive and developmental psychology/neuroscience), Lobachevsky (non-Euclidean geometry), Sakharov (nuclear physics, dissident), Kandinsky and Filonov (visual arts), Rachmaninoff, Shostakovich, Stravinsky, Prokofiev (composers), Zamiatin, Jakobson, Lotman, Bakhtin, Voloshinov (semiotics, theories of artistic texts). Taught in Russian. Students must be at CEFR B1 proficiency level.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, STS - (STS) Science, Technology, and Society, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RUSSIAN551 - Classics of Russian Literature and Textual Culture

Course Description

Reading and writing about the classical works of Russian literature with intensive textual analysis, including prose (short stories and povesti), poetry, essays, fiction and nonfiction of the 19th and 20th centuries. Authors include Pushkin, Gogol, Lermontov, Turgenev, L. Tolstoy, Chekhov, Bunin. Writing component will develop expository prose style and rhetorical strategies. Taught in Russian. Prerequisite: Russian 401 and 402, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, W - (W) Writing, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

RUSSIAN563 - Theory and Practice of Translation

Course Description

Detailed study of the American, European, and Slavic scholarly literature on translation combined with close analysis of existing literary and journalistic translations and a program of practical translation exercises and projects from English to Russian and Russian to English. Prerequisite: three years of Russian language study or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum

RUSSIAN564S - Russian and Slavic Linguistics

Course Description

Emphasis on synchronic linguistic theory focusing on East Slavic and Russian, but including diachronic approaches, and West and South Slavic languages. Focus on phonological, morphological, semantic and syntactic structures of Contemporary Standard Russian and modern Slavic languages.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LINGUIST564S RUSSIAN AND SLAVIC LINGUISTICS, SES564S RUSSIAN AND SLAVIC LINGUISTICS

General Education Curriculum Codes
SS - (SS) Social Sciences

RUSSIAN577 - Contemporary Russian Culture: Detective Novels and Film

Course Description

Popular novelists and film/television from 1900s-early twenty first century Russia. Theories of genre, anthropological approaches to defining cultural trends, mass cultural phenomena, and impact of globalization. Authors include Marinina, Dashkova, Dontsova, Kunin, Ustinova, and Serova. Readings and films in Russian. Research paper of publishable quality required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
1

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

RUSSIAN627 - Soviet and Post-Soviet Economic History

Course Description
This course traces economic factors leading to the downfall of the Russian Empire and the rise of the USSR, followed by an assessment of the collapse of the USSR. Particular attention is devoted to the NEP period, earlier Soviet economic models, the famine of the 1930s, the impact of the Great Patriotic War (WWII), industrialization and urbanization, Soviet planning, and declining productivity growth and life expectancy in the in the 1970s and 1980s. The course then explores the economic consequences of the USSR's collapse as well as the nature of recovery in various countries that followed. Prerequisite: Economics 201D and (Economics 208D or 204D, either of which can be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON627 SOVIET & POST-SOVIET ECON HIS, HISTORY627 SOVIET & POST-SOVIET ECON HIS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

RUSSIAN627D - Soviet and Post-Soviet Economic History

Course Description
This course traces economic factors leading to the downfall of the Russian Empire and the rise of the USSR, followed by an assessment of the collapse of the USSR. Particular attention is devoted to the NEP period, earlier Soviet economic models, the famine of the 1930s, the impact of the Great Patriotic War (WWII), industrialization and urbanization, Soviet planning, and declining productivity growth and life expectancy in the in the 1970s and 1980s. The course then explores the economic consequences of the USSR's collapse as well as the nature of recovery in various countries that followed. Prerequisite: Economics 201D and (Economics 208D or 204D, either of which can be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECON627D SOVIET & POST-SOVIET ECON HIS, HISTORY627D SOVIET & POST-SOVIET ECON HIS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

RUSSIAN701 - Elementary Russian

Course Description
Introduction to understanding, speaking, reading, and writing. Audiolingual techniques are combined with required recording-listening practice in the language laboratory.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RUSSIAN701S - Contemporary Russian Composition and Readings

Course Description
Advanced grammar and syntax with intense composition component. Analytical readings in the original. Prerequisite: Russian 703 and 704, or equivalent.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN702 - Elementary Russian

Course Description
Introduction to understanding, speaking, reading, and writing. Audiolingual techniques are combined with required recording-listening practice in the language laboratory.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RUSSIAN703 - Intermediate Russian

Course Description
Intensive classroom and laboratory practice in spoken and written patterns. Reading in contemporary literature. Prerequisite: Russian 701, 702 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RUSSIAN704 - Intermediate Russian

Course Description
Intensive classroom and laboratory practice in spoken and written patterns. Reading in contemporary literature. Prerequisite: Russian 701, 702 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RUSSIAN705 - Advanced Russian Conversation and Readings

Course Description
Nineteenth- and twentieth-century literature in the original. Conducted in Russian. Prerequisite: Russian 703, 704 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RUSSIAN706 - Advanced Russian Conversations and Readings

Course Description
Nineteenth- and twentieth-century literature in the original. Conducted in Russian. Prerequisite: Russian 703, 704 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RUSSIAN707 - Advanced Russian

Course Description
Advanced grammar review with an emphasis on the refinement of oral and written language skills. Development of writing style through compositions and essays. Prerequisite: Russian 706 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

RUSSIAN708 - Advanced Russian: Readings, Translation, and Syntax

Course Description
Intensive reading and conversation with emphasis on contemporary Russian literary and Soviet press texts. English-Russian translation stressed. Russian media, including television and films. Prerequisite: Russian 707 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

RUSSIAN711 - The Quest for Identity: Russian Literature and Culture, 1800-1855

Course Description

Examines how Russian writers and artists distinguished imperial Russia's modern political, social, and cultural identity under 'Western eyes.' Topics include search for 'truly Russian' models, topics, and styles; domestic debate between 'Westernizing' and 'Slavophile' camps; emergence of women writers; relations between urban and provincial cultures; connections between national identity formation and empire building. Course texts may include fiction, memoirs, and drama by Pushkin, Durova, Gogol, Lermontov, and Pavlova; social commentary by Belinsky and Herzen; works of fine art and folk culture.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

RUSSIAN711AS - Advanced Russian Language and Culture

Course Description

Advanced grammar review with additional emphasis on phonetics and conversation. Culture component includes literature, films, museums, and theater performances. (Taught in St. Petersburg in Russian.) Prerequisite: Russian 706 or equivalent.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

RUSSIAN712AS - Advanced Russian Language and Culture

Course Description

Advanced grammar review with additional emphasis on phonetics and conversation. Culture component includes literature, films, museums, and theater performances. (Taught in St. Petersburg in Russian.) Prerequisite: Russian 706 or equivalent.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

RUSSIAN714 - Methods in Teaching Russian

Course Description

The theory and practice of teaching Russian language to English-speaking students.

Grading Basis

Graded

Units

Min Units:

1

Max Units:

1

RUSSIAN720S - End of Life in Russia & U.S.

Course Description
Brief history of hospice movement in US and Russia. Examine key moments in end of life issues in each country; focus on social attitudes to death and dying and their effects on end of life care. Sources include memoirs, fiction, theoretical works, and policy documents. Service learning course; includes work at sites such as the Unicorn Bereavement Center, a skilled nursing facility, or the state's attorney's office.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN721 - The New Russia: Reflections of Post-Soviet Reality in Literature and Film

Course Description
Examination of fiction and film in the post-Soviet period. Topics include: crime and social breakdown in the 1990s and 2000s; transformations of classic character types (anti-hero, virgin-whore, swindler-rogue); religious and ethical quests; taboo-breaking themes. Works by authors Sorokin, Grishkovets, Pelevin, Petrushevskaya, Sadur, Shishkin, Minaev, Tolstaya, Akunin, Ulitskaya and filmmakers Bodrov, Rogozhkin, Bekmambetov, Khlebnikov/Popogrebsky, Balabanov, and Sokurov. Readings and class discussions in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN733S - Soviet Life through the Camera's Lense

Course Description
An in-depth look at images and representations of Soviet life through Soviet and Russian film. Film texts include films shown in theatres, television films and forbidden films/films with a very limited distribution. Emphasis on the period from the mid-1970s through 1991. Course taught in Russian.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN738S - Avant Garde Artistic Networks in and around the USSR

Course Description
This course examines the activities of avant-garde networks in and around the USSR. These include the October Association, TatLEF, and the International Bureau of Revolutionary Artists (MBRKh). We will explore the role of avant-garde art schools in network development, including VKhUTEMAS and the Mezhyhirya Art and Technical School near Kyiv. We will examine how the networks formed, their objects and pedagogies, their influence on visual politics, and on international networks of leftist artists. We look at the powerful influence of these networks on anti-imperial/anti-racist modernisms. The course offers an understanding of network practices within the politics of the interwar avant-garde.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST738S AVANT GARDE: ART AND NETWORKS

RUSSIAN753 - Law, Culture, and the Russian Legal Tradition

Course Description
The development of the Russian legal tradition, with particular emphasis on the historical, ethical and cultural factors that have contributed to its emergence, comparing the Russian tradition with the Western legal tradition. How law, lawyers, and legal institutions have been portrayed and perceived in Russian popular culture, especially Russian literature, including the relationship between secular legal institutions and the Russian Orthodox Church. Taught in English.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN773S - Russian Language and Culture through Film

Course Description
Study of Russian cultural paradigms and constructs of self and other as demonstrated in Russia and Soviet films, primarily from 1960s to the present. Special attention to the analysis of linguistic constructs and their cultural semantic content as well as comparative analyses of Soviet and Russian culture and Russian and European/American culture. Film and computer technology, as well as access to these technologies and their implementation, are a central part of the cultural context. Includes oral and written presentations and analysis which require the usage of additional film text and secondary critical literature. Prerequisite: Russian 301S or equivalent or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE773S RUS LANG/CULTURE THROUGH FILM, VMS773S RUS LANG/CULTURE THROUGH FILM

RUSSIAN810 - The Russian Fairy Tale and Its Cultural Legacy

Course Description
Introduction to Russia's extraordinary fairy tales and their rich legacy in modern Russian literature, music, visual and performing arts, and handicrafts. Reflects on the genesis of the Russian fairy tale; samples thematic groups of tales (e.g., the 'foolish' third son, stepmother-stepdaughter tales); reads tales as expressions of folk belief, works of oral art, explorations of the human psyche and human relations, and stylized reflections of their sociopolitical context. Also traces how certain tales have been reworked into other art forms. All texts in English translation.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

RUSSIAN990 - Directed Readings

Course Description
Advanced readings in nineteenth- and twentieth-century Russian literature in the original.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SANSKRIT701 - Introductory Sanskrit Language and Literature

Course Description
Introduces classical, literary Sanskrit, the ancient and trans-continental language of India's intellectual heritage, history, and sacred scriptures. Teaches students Devanagari script, to learn and analyze grammatical forms and structures, vocabulary, and to interpret meaning. Provides an overview to the literature and civilizational importance of Sanskrit, from the ancient past to the present. Course will give graduate students the grammatical and analytic tools they will need to begin to read and interpret original texts.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION707 INTRO SANSKRIT LANG & LIT

SANSKRIT702 - Intermediate Sanskrit Grammar and Readings

Course Description
The second semester's follow-up to Introductory Sanskrit, this course completes an overview of the grammar and syntax of Classical Sanskrit, and transitions to primary readings in original sources of the literature. These primary readings are chosen in consultation with graduate students based on their curricular needs and particular research interests.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION708 INTERMEDIATE SANSKRIT

SANSKRIT803 - Selected Sanskrit Readings

Course Description
This is a reading course building on a prior knowledge of Sanskrit grammar to introduce the skills needed for reading the varieties of different kinds of texts found in Sanskrit literature including basic scriptural texts in the aphoristic 'sutra' style, more expanded Epic or lyric styles of narrative and devotional poetry, and the various protocols to be mastered for reading scholastic commentaries. The course has as a prerequisite a basic and overall knowledge of Sanskrit grammar. Prerequisite: Sanskrit 702/Religion 708.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION809 SELECTED SANSKRIT READINGS

SBB658 - Structural Biochemistry I

Course Description
Principles of modern structural biology. Protein-nucleic acid recognition, enzymatic reactions, viruses, immunoglobulins, signal transduction, and structure-based drug design described in terms of the atomic properties of biological macromolecules. Discussion of methods of structure determination with particular emphasis on macromolecular X-ray crystallography NMR methods, homology modeling, and bioinformatics. Students use molecular graphics tutorials and Internet databases to view and analyze structures. Prerequisites: organic chemistry and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM658 STRUCTURAL BIOCHEMISTRY I, CMB658 STRUCTURAL BIOCHEMISTRY I, CELLBIO658 STRUCTURAL BIOCHEMISTRY I, UPGEN658 STRUCTURAL BIOCHEMISTRY I, CBB658 STRUCTURAL BIOCHEMISTRY I

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

SBB659 - Structural Biochemistry II

Course Description
Continuation of Biochemistry 658. Structure/function analysis of proteins as enzymes, multiple ligand binding, protein folding and stability, allostery, protein-protein interactions. Prerequisites: Biochemistry 658, organic chemistry, physical chemistry, and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM659 STRUCTURAL BIOCHEMISTRY II, CELLBIO659 STRUCTURAL BIOCHEMISTRY II, CBB659 STRUCTURAL BIOCHEMISTRY II, UPGEN659 STRUCTURAL BIOCHEMISTRY II

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

SCISOC502S - Communicating Science & Bioethics

Course Description
Examination of the challenges and best practices for communicating scientific and bioethical issues to the public, journalists, and policymakers. Explores historical and cultural factors that influence public understanding of and attitudes toward scientific and bioethical issues. Students will draw on communication case studies from a variety of disciplines (genetics, neuroscience, law, bioethics) and their own academic interests as a context for developing writing and speaking skills essential for clear communication of complex topics to non-specialists.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOETHIC502S COMMUNICATING SCIENCE & BIOETH

General Education Curriculum Codes
(STS) Sci, Tech, and Society

SCISOC508 - China Science and Technology Policy and Innovation

Course Description
China's technological rise has become one of the most important developments in the 21st century. This course will focus on an analysis of China's science and technology policy and innovation strategy, with emphasis on the 1978-Present period. The course will examine the transition in technological development from a Soviet -style top-down model to one where market forces play a greater role in driving advances in science and technology. We also will analyze China's increasing emphasis on an innovation driven economic model. Prereqs: basic knowledge of Chinese history, politics, economics and/or culture. Some basic knowledge of macroeconomics. Some knowledge of politics in the US and abroad.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES523 CHINA S&T POLICY & INNOVATION, EAS508 CHINA S&T POLICY & INNOVATION, POLSCI523 CHINA S&T POLICY & INNOVATION, PUBPOL512 CHINA S&T POLICY & INNOVATION

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (STS) Sci, Tech, and Society, (SS) Social Sciences

SCISOC519 - Introduction to International Organizations and Technology Policy

Course Description
This course will explore efforts by international organizations to shape and promote digital technology policy. Students will evaluate case studies and ongoing initiatives, including those by the United Nations, Organization for Economic Cooperation and Development, World Economic Forum, G7, and G20, to develop policy solutions that help address concerns and ensure that the digital transformation benefits society as a whole.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL519 INT. ORG & TECH POLICY

SCISOC552S - Cybersecurity and Health Data Policy

Course Description
In recent years health data has expanded beyond just clinical and pharmaceutical research data to also include a broad set of information from which health observations can be inferred. This health data landscape change has caused concern that existing health privacy and cybersecurity policy frameworks like HIPAA may need modification. This class will use interactive exercises to analyze the issues of how best to optimize health data public policy for the innovative and ethical use of data to enable better health outcomes and lower costs.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL552S CYBERSECURITY & HEALTH POLICY

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

SCISOC585 - Digital Intelligence: The Ethics of Emerging Technologies

Course Description
The Digital Intelligence course helps students navigate and understand and analyze the ethical and social impact of emerging technologies through an applied ethical lens. In a flipped-classroom format, students will watch asynchronous videos on a weekly basis featuring leading technology, ethics, and policy experts as they discuss relevant and timely topics such as algorithmic bias, the impact of social media on democracy, and privacy in the digital age. Students will meet weekly in small discussion groups to work through case studies and to critically engage with a practical ethics approach to the topics presented in the video and additional assigned material.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(EI) Ethical Inquiry

SCISOC586 - Advanced Digital Intelligence

Course Description
In this course, we will be examining advanced topics in the ethics of emerging technology, and those topics around which scholarly consensus is still emerging. Every other week, we will introduce a new topic, such as tech and social polarization; misinformation and disinformation; and whether cryptocurrency has a legitimate role in modern economies. After exploring the current understanding of each topic, every other week, students will present arguments in favor of and against an emerging consensus on the issue, to advance the entire class's understanding of the topic.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society

SCISOC590 - Special Topics in Science & Society

Course Description
Topics will vary.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

SCISOC590S - Special Topics in Science & Society

Course Description
Topics will vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SCISOC611S - Alt-Science; Bad Science: The Policy, Politics and Ethics of Misinformation on Science, Tech, Health

Course Description
This course will explore the origins, effects, and solutions to mis- and disinformation about science, technology, and health. It will investigate the social and technical forces that motivate, facilitate, amplify, and sustain misinformation about technical topics through a series of historical and contemporary cases. Drawing on ethical and policy frameworks, we will ask both what is just and what is expedient in how we approach and mitigate false and problematic content.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL611S ALT-SCIENCE; BAD SCIENCE, JAM611S ALT-SCIENCE; BAD SCIENCE

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, SS - (SS) Social Sciences

SCISOC613S - Technology Policy for the New Administration: Antirust, Speech and Other Emerging Issues

Course Description
A seminar that will explore the technology policy agenda for the administration that will begin in January 2021. The course will examine how the new administration should consider policy design for technology, and will evaluate the potential impact of various policy proposals in consideration. Topics will include antitrust policy, harmful content, and free expression. Additional topics may include privacy, cybersecurity, law enforcement and national security, and artificial intelligence. The focus of the course may shift based on current events.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL613S TECHNOLOGY POLICY

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (SS) Social Sciences

SCISOC614 - Privacy and Ethical Decision-Making in Our Digital Era

Course Description

Emerging technologies and data use in our digital economy affect privacy. We will evaluate the ethical issues raised when emerging tech and data use intersect with Americans' privacy interests in a variety of current contexts: law enforcement surveillance technologies; the national response to the Covid-19 pandemic; corporate surveillance and the advertising business model; the ways in which our family, friends, and neighbors' use of technology can affect our privacy (e.g., DNA testing, Alexa, Amazon Ring, Nest); student surveillance; sexual privacy and Section 230; algorithmic decision-making; and employment issues including hiring and monitoring. Spoiler alert: Privacy Isn't Dead.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PUBPOL614 PRIVACY, ETHICS, DATA AND TECH

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

SCISOC614S - Privacy and Ethical Decision-Making in Our Digital Era

Course Description

Emerging technologies and data use in our digital economy affect privacy. We will evaluate the ethical issues raised when emerging tech and data use intersect with Americans' privacy interests in a variety of current contexts: law enforcement surveillance technologies; the national response to the Covid-19 pandemic; corporate surveillance and the advertising business model; the ways in which our family, friends, and neighbors' use of technology can affect our privacy (e.g., DNA testing, Alexa, Amazon Ring, Nest); student surveillance; sexual privacy and Section 230; algorithmic decision-making; and employment issues including hiring and monitoring. Spoiler alert: Privacy Is Not Dead.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

PUBPOL614S PRIVACY, ETHICS, DATA AND TECH

General Education Curriculum Codes

EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, CZ - (CZ) Civilizations

SCISOC615S - Privacy: Concepts and Culture Informing Law and Policy

Course Description

In this seminar about the development of privacy law and policy, we will explore conceptual understandings of privacy with class sessions dedicated to consent and control, anonymity and obscurity, personality and identity, freedom from surveillance, manipulation and attention, power, and trust. We will spend the second part of the semester looking at the ways these concepts play out in different cultural contexts: the United States, U.S. corporate culture, the EU, China, and India. Throughout, we will consider the ways cultures change over time, the relevance of demographics, the power of norms, and the role of emerging technologies.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, STS - (STS) Science, Technology, and Society, SS - (SS) Social Sciences

SCISOC680S - Technology Policy

Course Description
An overview of current issues in technology policy, such as content moderation, antitrust, data sharing, and encryption. The course will approach these issues from a practitioner's perspective, exploring the costs and benefits of existing and potential policy frameworks and the relationship between public policy and technology product design.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
PUBPOL680S TECHNOLOGY POLICY

General Education Curriculum Codes
(EI) Ethical Inquiry, (STS) Sci, Tech, and Society

SCISOC690 - Special Topics in Science & Ethics

Course Description
The specific topic addressed in each course will vary, but will focus upon the ethical issues which arise in a selected area of innovative technology, such as artificial intelligence, gene editing, the impact of social media, big data and similar issues.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
3

SCISOC698 - Research Based Independent Study within Science & Society

Course Description
Individual research in a Science & Society topic of special interest, under the supervision of a faculty member, the major product of which is a substantive paper or written report containing specific analysis and interpretation of a previously approved topic. Open to all qualified students with consent of supervising instructor. May be repeated.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
4

General Education Curriculum Codes
(R) Research

SCISOC702 - Science Communication for Scientists

Course Description
This course provides students in the sciences with practical training in the communication of scientific research to non-scientists, and helps them develop skills essential to doing meaningful outreach. Topics covered include the empirical benefits of communicating science; development of speaking, writing, and storytelling practices for diverse audiences; answering difficult, controversial, and critical questions from the media; and tweeting, blogging, and presenting research to engage non-scientists (including the lay public and policy-makers).

Grading Basis
Credit / No Credit

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOETHIC702 COMMUNICATION FOR SCIENTISTS

SCISOC709S - Science, Medicine, and the Body

Course Description
Introduces students to scholarship about the body's complex relations to science, technology and medicine. Examines how embodied knowledges and experiences of pain, disease, injury, and ability relate to forms of gender, sexuality, race, state power, coloniality, and capital. Explores these connections across debates in medical anthropology, science and technology studies, cultural theory, and the medical humanities, while paying close attention to different genres of writing.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH709S SCIENCE, MEDICINE, BODY, GSF709S SCIENCE, MEDICINE, BODY, GLHLTH709S SCIENCE, MEDICINE, BODY, LIT709S SCIENCE, MEDICINE, BODY

SCISOC750 - Genomics of Microbial Diversity

Course Description
Graduate seminar explores the use of genomic approaches to illuminate microbial diversity and to clarify mechanisms generating variation within and among microbial lineages and communities. Course is targeted to Ph.D. students in the areas of genomics, genetics, environmental sciences, ecology, and/or computational biology. Discussions will focus on case studies from the primary literature, followed by computer labs allowing hands-on use of current programs.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ENVIRON750 GENOMICS OF MICROBIAL DIVRSITY

SCISOC590S-1 - Special Topics

Course Description
Seminar version of African & African American Studies 690.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS690S SPECIAL TOPICS

SES564S - Russian and Slavic Linguistics

Course Description
Emphasis on synchronic linguistic theory focusing on East Slavic and Russian, but including diachronic approaches, and West and South Slavic languages. Focus on phonological, morphological, semantic and syntactic structures of Contemporary Standard Russian and modern Slavic languages.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RUSSIAN564S RUSSIAN AND SLAVIC LINGUISTICS, LINGUIST564S RUSSIAN AND SLAVIC LINGUISTICS

General Education Curriculum Codes
SS - (SS) Social Sciences

SES735S - The Art & Politics of Cotton

Course Description
Cotton played a critical role in the development of both modern economies and modern cultures. This course focuses on cotton's role in the capitalist United States from the Civil War period to now and the socialist USSR from its inception in 1917 to its demise in 1991. We will look at visual objects that reflect the history of cotton in both economies and will emphasize the influence of the cotton trade on modern African American and Soviet art in Central Asia. We will explore slavery, race, and racism in both capitalist and socialist culture within the context of cotton. The course includes visits to relevant sites and offers an introduction to the visual history of the cotton trade.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST736S THE ART AND POLITICS OF COTTON, AAAS736S THE ART AND POLITICS OF COTTON

SES745S - East/West/Zion: Jewish Literary Modernism

Course Description
This course explores how Jewish authors in the first half of the twentieth century negotiated questions of space and place, tradition and modernity, language, nationality, religious practice, and politics. There will be a special focus on the role of Eastern Europe in the literary imagination of German-Jewish writers, and the use of modernist form and style. Authors may include Franz Kafka, Joseph Roth, Alfred Döblin, Arnold Zweig, Veza Canetti, Rose Ausländer, S.Y. Agnon, Dovid Bergelson, Isaac Babel, and Bruno Schulz. Discussions will take place in English. Most readings will be in German, with a few additional works in Hebrew, Yiddish, Russian, and Polish.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN740S JEWISH LITERARY MODERNISM, JEWISHST740S JEWISH LITERARY MODERNISM, LIT730S JEWISH LITERARY MODERNISM

SES756 - Imperial Russia 1700-1917

Course Description
Russian imperial history from Peter the Great to Bolshevik Revolution: 1700-1917. Focus on formation and governance of multiethnic and multi-confessional Russian empire. Traces expansion of land-locked city state (Muscovy) into world power ruling from Eastern Europe to Alaska. Questions implications of Russias world-power status. Examines institutions of governance that created this empire and held its various ethnic, religious and ideological groups together for centuries. Readings of English translations of works of Russian literature and historiographic analyses aimed at developing a sound grounding in Russian imperial history and culture.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SES772S - The Frontiers and Minorities of the Tsarist and Soviet Empires

Course Description
Introduces multi-confessional, multilingual, multicultural composition of Russian & Soviet empires with questions concerning minorities in an imperial context. Learn about construction, interaction, and manipulation of cultures and identities. Balance Tsarist & Soviet efforts to modernize and Russify minorities, such as Ashkenazi Jews, Poles, & Turkic Muslims, against negotiated transformation and cultural resilience of minorities. Recognizes cultural diversity in an imperial setting and provides better appreciation of Russian and Eurasian realities and other multicultural contexts such as America. No Russian required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SES773S - Between Moscow, Beijing and Delhi: Narratives of Europe and Asia

Course Description
Exercise in reconstructing Eurasian history from the 13th century Mongol invasions to post-Soviet era through critical reading of eyewitness accounts--travel notes and memoirs. Reflects on political, religious, and cultural evolution, expansion, and rivalry as well as cross-cultural and trans-regional exchange.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SES774S - Ideology and Religion in Muslim Central Eurasia

Course Description
While Islam as a lived religion offers a common starting point to understand the experiences of Muslims in Central Eurasia, ideologies such as Islamism, positivism, nationalism, and socialism have informed the various powers that attempted to regiment their lives according to various blueprints for a future society since the nineteenth century. Thus, the minds and bodies of Central Eurasia's Muslims have been the subject of intense intellectual debates and social engineering interventions, and in their experiences, this course explores the modern interplays of religion and ideology as they have been mediated by individual or group interests, power dynamics, and mundane realities.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES774S IDEOLOGY AND ISLAM IN EURASIA, HISTORY774S IDEOLOGY AND ISLAM IN EURASIA, RELIGION774S IDEOLOGY AND ISLAM IN EURASIA

SES790S - Topics in Slavic and Eurasian Studies

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SES990 - Directed Readings

Course Description
Advanced Readings in Turkish Language and Culture.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SOCIOL502S - Race, Class, and Gender in the University

Course Description
The American university generates some of the most influential ideas and policies on the planet. It is the product of culture-specific ideas and aspirations, as well as a long history of selective social exclusion, inclusion, and transformation. Yet most of us take for granted the culture-specific forms of reasoning, discourses, political loyalties, administrative practices, social relationships, and financial flows that constitute it. Through theoretical, historical, ethnographic, statistical, policy-oriented, novelistic, and journalistic accounts, we will de-naturalize and historicize the power/knowledge that not only forms us but also, in many ways, rules the world.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH502S THE UNIVERSITY AS A CULTURE, HISTORY513S THE UNIVERSITY AS A CULTURE

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

SOCIOL521S - Black Ethnographers

Course Description
What is ethnography, broadly defined? How is a scholar's ethnographic product shaped by their racialized experience? We will use books, articles, podcasts, documentaries, music, dance, and poetry for an in-depth study of the various ways that U.S.-based Black intellectuals in the social sciences have used ethnography to make sense of and theorize our and their everyday social worlds. We will pay special attention to questions of sexism, anti-Black racism, white supremacy, and colonialism, as these become relevant to the scholars' work, relationships to their disciplinary homes, and lived experiences.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH521S BLACK ETHNOGRAPHERS, AAAS521S BLACK ETHNOGRAPHERS, GSF521S BLACK ETHNOGRAPHERS, ICS521S BLACK ETHNOGRAPHERS

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, SS - (SS) Social Sciences

SOCIOL541 - The United States and the Asian Pacific Region

Course Description
Asian Pacific region is major engine of economic growth in the 21st century likely causing major shift of power and wealth in the world. Study relationships between US and various Asian Pacific nations from the end of World War II to present. Focus on impact of wars, technological development and economic development. Examine differences in various issues such as trade, human rights, environment, territory disputes between US and a variety of Asian Pacific nations. Same as Sociology 341, with additional work required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SB - (SB) Social & Behavioral Analysis: A&S Curriculum, CZ - (CZ) Civilizations, SS - (SS) Social Sciences

SOCIOL560S - Political Polarization Research Practicum

Course Description
This course explores the causes, consequences, and potential solutions to political polarization in the United States drawing on interdisciplinary perspectives from political science, sociology, and statistics. Key topics include the role of social media, AI, and political campaigns in driving partisan animosity. The course serves as a hands-on practicum to provide students with the tools and experience to conduct original research about political polarization. Students will develop their skills with research design, data collection, analysis, and academic writing by working on a research project in small teams. Recommended perquisite: Proficiency in R and/or Python Affiliation with the Duke Polarization Lab.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI560S POLITICAL POLARIZATION

General Education Curriculum Codes
R - (R) Research, SS - (SS) Social Sciences

SOCIOL590 - Special Topics in Sociology

Course Description
Substantive, theoretical, or methodological topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL641S - Proseminar in Medical Sociology (Special Topics)

Course Description
Selected topics in medical sociology: social structure and health; social behavior and health; organization and financing of health care; medical sociology (for example, social epidemiology, stress and coping, health and aging).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
SS - (SS) Social Sciences

SOCIOL642 - Global Inequality Research

Course Description
Engagement of vertically integrated research teams in projects exploring racial and ethnic disparities exhibited and expressed in six arenas: employment, wealth, health, political participation, education, and arts and culture. Each team will produce a major paper that will qualify for submission to a refereed journal in the area relevant to the focus of the study.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS642 GLOBAL INEQUALITY RESEARCH, ECON541 GLOBAL INEQUALITY RESEARCH, POLSCI642 GLOBAL INEQUALITY RESEARCH, PUBPOL645 GLOBAL INEQUALITY RESEARCH, RIGHTS642 GLOBAL INEQUALITY RESEARCH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, SS - (SS) Social Sciences

SOCIOL647 - Surviving Globalization: The Global South and the Development Imagination

Course Description

Global Change entails a multiplicity of environmental, social, economic, political and cultural factors that create challenges for development. The Global South, a vital area of the world, has been entangled in this vortex of global change as both catalyst and conductor of an emergent globalizing modernity. The progress of globalization seems beset by multiple stressors, ranging from financial crises and global recession, to climate change, state and non-state conflicts, free ranging terrorist aggression, and global health scares. What are the odds then of surviving globalization? What role do our imaginations of development play in either creating crises or effectively responding to them? This course is the same as African & African American Studies 409 but with additional graduate level work.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

AAAS646 SURVIVING GLOBALIZATION, ICS647 SURVIVING GLOBALIZATION

General Education Curriculum Codes

CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, SS - (SS) Social Sciences

SOCIOL690 - Special Topics in Sociology

Course Description

Substantive, theoretical, or methodological topics vary by semester.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

SOCIOL690S - Seminar in Selected Topics

Course Description

Substantive, theoretical, or methodological topics.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

SOCIOL699S - Qualitative Methods in Sociology

Course Description

This course will teach students how to use qualitative methods in sociological research. We will focus on interviewing and participant observation.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, SS - (SS) Social Sciences

SOCIOL700S - Surveillance, Technology, and Capitalism

Course Description
This class will explore the role of surveillance and technologies of monitoring and control in the world today. We will engage with debates about panopticism and privacy; social media and algorithimic amplification; e-commerce, data harvesting and platform capitalism; cyborgization and human/nonhuman configurations; labor rights and social protest under regimes of corporate and state surveillance; and changing assemblages of race, gender, citizenship and identity. Readings will range across feminist, Marxism and post-Marxism, STS, ethnographic explorations of precarity and the new economy, and literatures about digitality, finance, and biopolitics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH700S SURVEILLANCE AND TECHNOLOGY, LIT700S SURVEILLANCE AND TECHNOLOGY

SOCIOL701 - Current Debates and Professional Concerns in Sociology

Course Description
A two-semester overview of the sociological research being conducted in the Department, a discussion of current controversies in the discipline, how to prepare for a professional career in sociology, the ethics of doing sociological research, the practice of teaching, how to apply for research grants. Prerequisites: First year Sociology PhD program required course. Open only to Duke Sociology PhD students, includes those enrolled in the Dual Public Policy program.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

SOCIOL702 - Second-Year Paper Workshop

Course Description
A two-semester workshop in which each student carries out a research project from beginning to end. Weekly seminars offer the opportunity for students to critique each other's work.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1.5

Max Units:
1.5

SOCIOL703 - Modern Plain-Text Computing

Course Description
Introduction to modern methods of data analysis, management, and coding for first-year graduate students. Key concepts and tools for reliable and reproducible research. File systems, the shell, version control, and best practices for statistical programming.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

SOCIOL710 - Sociological Theory

Course Description
Sociological theory for first-year graduate students. Covers classical and contemporary theory, with a focus on how sociologists use theory in present-day research.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

SOCIOL716S - Capitalism

Course Description
This course introduces students to some of the debates relating to the current financial crisis—both within and beyond the field of finance itself. Combining media accounts with scholarly critiques of the current structures for money making, this course is primarily committed to theorizing the culture of capitalism in the early 21st Century. The larger inter-disciplinary framework for the course encompasses inter-related fields of inquiry including anthropology, cultural geography, and political economy.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH716S CAPITALISM, POLSCI720S CAPITALISM

SOCIOL720 - Survey Research Methods

Course Description
Theory and application of survey research techniques in the social sciences. Sampling, measurement, questionnaire construction and distribution, pretesting and posttesting, response effects, validity and reliability, scaling of data, data reduction and analysis.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL720S - Logic of Inquiry

Course Description
First in a two-course sequence. Explores sociological research methods. Focuses on basic elements shared by all sociological research: research questions, research design, measurement, sampling, and data collection. Will sharpen students' research skills, help them distinguish good from poor matches between research questions and research methods, and equip them to design and execute high quality sociological research. Consent of instructor is required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

SOCIOL722 - Social Statistics I: Linear Models

Course Description
Introduction to regression modeling for first-year sociology graduate students; multiple regression in matrix form; least squares and maximum likelihood; generalized linear models; regression diagnostics; model selection.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

SOCIOL723 - Social Statistics II: Advanced Techniques

Course Description
Advanced methods for first-year sociology graduate students; content varies but may include: logit, probit, and other generalized linear models; propensity score and other forms of matching; instrumental variables; panel and multilevel data; simulations. Prerequisites: Sociology 722 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

SOCIOL726S - Advanced Methods of Demographic Analysis

Course Description
Mathematical methods and computer software for the analysis of population dynamics. Life table and stationary population theory; methods of life table estimation; multiple-decrement and multistate life tables; stationary population theory and its extensions; model life tables and stationary populations; two-sex models and interacting populations; hazard regression models, grade-of-membership analysis, and cohort studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL728 - Advanced Methods: Introduction to Social Networks

Course Description
Introduction to social network analysis (SNA). History of SNA; social-theoretical foundations of modern network analysis; data collection; data management; analysis and visualization tools. Survey of current applications of SNA within the social sciences. Satisfies Sociology PhD program advanced methods requirement.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SOCIOL729S - Structural Equation Modeling

Course Description
Basic and advanced Structural Equation Modeling (SEM) with and without latent variables. Topics include statistical theory underlying multivariate statistical modeling specific to SEM, path analysis, confirmatory (and exploratory) factor analysis, multiple group analysis, multiple indicator multiple cause (MIMIC) modeling, full SEM, and contemporary extensions to growth modeling and latent class analysis. Homework involves applying SEM software to real and simulated social science data. Recommended prerequisite: a basic statistics course and a course covering linear regression modeling.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL750S - Proseminar in Population Studies (Special Topics)

Course Description
Selected topics: population dynamics; mortality, morbidity, and epidemiology; urbanization and migration; demography of the labor force; demography of aging; population studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL760S - Proseminars in Social Institutions and Processes (Special Topics)

Course Description
Selected topics in the sociology of institutions and social and institutional behavior: social networks; political sociology; sociology of religion; sociology of science; sociology of education.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SOCIOL765S - Proseminar: Topics in Social Stratification

Course Description
Core and special topics in social stratification, including explanations for the existence, amount, and various dimensions of stratification in society; institutions that produce stratification; forces that cause the structure of stratification to vary both over time and across societies; and structures that govern social mobility within and across generations. Intergenerational mobility; social structure and the life course; social inequality and the structure of poverty; careers and labor markets; societal transformation; stratification and mobility research.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL770S - Proseminar in Social Psychology (Special Topics)

Course Description
Selected topics in microsociology and social psychology, including social interaction, decision making, social exchange, group processes, intergroup relations, self and identity, social structure and personality, social networks, and application in organizations and health care. Introduction to social psychology; rational choice and social exchange; sociology of self and identity; group processes and intergroup relations; experimental research; practicum; social psychology.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SOCIOL771S - Precarity and Affect

Course Description
Explore the two concepts of precarity and affect in terms of their intersection, overlap, and interface: How is affect experienced and produced under conditions of global capitalism and expanding inequity, risk, and insecurity in social living around the world? The course will tack between theoretical and ethnographic studiers of the two concepts, considering their utility, how they can be expanded in other directions, and what an anthropological approach does, our could, lend to these topics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH707S PRECARITY AND AFFECT, GSF707S PRECARITY AND AFFECT, LIT707S PRECARITY AND AFFECT

SOCIOL776 - The Social Organization of American Religion

Course Description
Focuses on social and institutional aspects of American religion. Topics include trends in American religion, social sources of religious variation, sociological knowledge about congregations and clergy, and religion's place in American society.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SOCIOL780T - Applied Sociology Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on sociological contexts and methods. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, databases, white papers, data visualizations). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI780T APPLIED SOCIOLOGY RESEARCH

SOCIOL781T - Applied Sociology Research

Course Description
Project-based course in which undergraduate and graduate students work collaboratively to produce a significant public-facing research product drawing on sociological contexts and methods. Topics vary depending on section. Students will gain a conceptual understanding of the project topic, develop research plans, conduct new research, and develop a final product containing significant analysis and interpretation (e.g., exhibits, databases, white papers, data visualizations). Graduate students will mentor undergraduate students and take leadership roles in facilitating projects. Some courses will continue in a two-semester sequence. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
POLSCI781T APPLIED SOCIOLOGY RESEARCH

SOCIOL790S - Seminar in Selected Topics

Course Description
Substantive, theoretical, or methodological topics. Restricted to Sociology graduate program majors only.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SOCIOL791 - Individual Research in Sociology

Course Description
Students will conduct on an individual basis research designed to evaluate a sociological hypothesis of their choice. The process must be completed by preparation of a report on this research in adequate professional style. Prerequisite: Sociology 721S or consent of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

SOCIOL880 - Special Topics in Sociology

Course Description
Substantive, theoretical, or methodological topics vary by semester. Open only to PhD students.

Grading Basis
Graded

Units

Min Units:
1.5

Max Units:
1.5

SPANISH510S - Feeling and Protest

Course Description
Detractors of social movements deploy critiques of irrationality—as signs of unchecked emotions leading to violence—to undercut their credibility. They promote the suspicion that grassroots protests are incompatible with reason. As a result, social movements bear the burden of countering this narrative to establish a credible voice. Rather than an unconscious symptom, many social movements have historically engaged with feelings to organize political action. Beyond indigitation, disgust, desire, fatigue, solidarity, and sensory modalities like sound, visuality, and smell are used to advance their message. In this seminar we will study various social movements from the 20th and 21st centuries global Hispanophone to understand how affect mediates these struggles.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST510S FEELING AND PROTEST, LIT511S FEELING AND PROTEST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

SPANISH520S - Don Quixote in the Real World: From Escapism to Engagement

Course Description
This seminar shifts the study of the novel as a literary artifact to illuminate the synergy among the fields in the humanities, political economy, and law unique to the early modern period. Diverse readings introduce how the novel encompasses centuries of humanistic thought establishing modern parameters of moral philosophy, law, history, and economic thought. Cervantes' concern with social justice, freedom, empathy, and legal protection reflect on current moral questions about migration, difference, power, and wealth. Recent films and performances based on the novel re-assess Quixotism as engagement and activism.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ETHICS520S DON QUIXOTE IN THE REAL WORLD, LIT538S DON QUIXOTE IN THE REAL WORLD, MEDREN620S DON QUIXOTE IN THE REAL WORLD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

SPANISH525S - Indigenous languages and their speakers in Latin America

Course Description
In this course, students will engage in reflecting on the roles of indigenous languages and their speakers in the history, culture and literature of Latin America. Students will be immersed in a diverse corpus composed of oral narrations, historical documents, and material culture from digital archives and museums. The course will cover three geographical areas and the languages spoken in them, including: • Andes-Amazon: Quechua, Aymara, Tupi-Guarani and Matsigenka. • Mesoamerica: Nahuatl, K'iche and Zapotec • Southern cone: Mapudungun, Tehuelche and Guarani.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY524S INDIGENOUS LANG & CULT, LSGS525S INDIGENOUS LANG & CULT, LATAMER525S INDIGENOUS LANG & CULT

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

SPANISH538S - Revolution in the Novel/Novel of Revolution

Course Description
Exploration of Spanish novel from 1962 to 1987, a period of exceptional development highlighting 'radical artifice' including use of parody, multiple narrators, subplots and time schemes, as well as countless self-reflexive devices. Collectively representing a 'revolution in the novel', these works also provide complex and sophisticated commentaries on vexed contemporary questions concerning the direction of Spanish politics and society spanning the years of late Francoism and the transition to democracy, reflecting both 'revolutionary' and 'counter-revolutionary' trends—including the unfinished revolution of women's emancipation addressed through key works by women authors of the period.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, FL - (FL) Foreign Language, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

SPANISH540S - Many Mexicos

Course Description
A fresh look at contemporary writing referencing the need for political change and the reality of social inertia caused by unexamined dogmas, sectarian violence and economic self-interest. Readings will include pre-1950 novels (Mariano Azuela, D. H. Lawrence, José Revueltas) variously engaging the 'dark side' of mass movements and party politics; works drawn from the literary 'saga del 68' focused on student protests of 1968, including Elena Poniatowska's controversial La noche de Tlatelolco (1971); Juan Villoro's novel Arrecife (2012), a window onto the rise of neoliberal markets in post-NAFTA Mexico. Primary readings subject to change. Conducted in Spanish in a jargon-free environment.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

SPANISH550S - Caribbean Literary Theory

Course Description
This course studies the Caribbean as a site where many key features of modernity were tried or implemented within the context of the expansion of early racial capitalism, colonialism, and slavery. It will focus on a key number of concepts and ideas developed by authors and artists in order to account for their specific colonial and then postcolonial condition and how they came to have a truly global influence later. Topics such as 'transculturation', lo 'real maravilloso', plantation and counter-plantation, transversality, tidalectics, among others, will be discussed, through literary works, as well as works of art and music.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, FL - (FL) Foreign Language, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, LG - (LG) Language: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

SPANISH590S - Seminar in Spanish Literature

Course Description
Topics to be announced.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
(FL) Foreign Language

SPANISH717S - Art & Democracy: Madrid/Barcelona/Bilbao

Course Description
Beyond the political poster and the large mural, was there a painterly art in the pre-digital age that found a fitting place on the street and the square, the quintessential citizen venues where democracy and populist politics first emerged? And is there a political praxis which may yield visual works of enduring value without sacrificing the imperative of communicability inherent in humanistic pursuits? Since the1960s such questions concerned committed Spanish artists in all styles (Tàpies, Genovés, Ibarrola, Saura, Equipo Crónica). Like Goya before them, these painters tried to help their society transition from tyranny to more inclusive forms of participation.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST709S ART/DEMOCRACY/MADRID/BARCELON, LIT717S ART/DEMOCRACY/MADRID/BARCELON

SPANISH718S - Baroque: Patterns of Thought, Transformation, and Accumulation in the Hispanic World

Course Description
Interlocked patterns of thought, transformation, and accumulation exploring the problem of appearances and the reality they purport to represent, leading to dynamic transformations in sovereignty, aesthetics, performance, stories, and knowledge, entangling the increasing fascination with libraries, archives, and scientific collections, with global capitalism and its racial forms. Taught in English.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY718S BAROQUE IN THE HISPANIC WORLD, LIT718S BAROQUE IN THE HISPANIC WORLD

SPANISH790 - Topics in Spanish Studies

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SPANISH790S - Topics in Spanish Studies

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

SPANISH791 - Special Readings

Course Description
Supervised independent study and reading. Consent of instructor required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

STA502 - Bayesian Inference and Decision

Course Description

Methods of Bayesian inference and statistical decision theory, with emphasis on the general approach of modeling inferential and decision-making problems as well as the development of specific procedures for certain classes of problems. Topics include subjective probability, Bayesian inference and prediction, natural-conjugate families of distributions, Bayesian analysis for various processes, Bayesian estimation and hypothesis testing, comparisons with classical methods, decision-making criteria, utility theory, value of information, and sequential decision making.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

BA910 BAYESIAN INFERENCE & DEC

STA503 - Choice Theory

Course Description

This seminar deals with the foundations and applications of the theory of rational choice, including Bayesian decision theory (subjective expected utility) as well as nonexpected utility theory, noncooperative game theory, and arbitrage theory. It will survey the classic literature in the field and discuss the interconnections among its branches; dissect a variety of paradoxes, puzzles, and pathologies; and discuss recent advances and controversies. The goal of this seminar is to equip students with an understanding of both the power and the limits of rational choice theory, so that they can construct as well as critically analyze rational choice applications in a wide variety of social science contexts. It will also suggest some new directions for choice-theoretic research that involve a synthesis of ideas from competing paradigms.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

BA913 CHOICE THEORY

STA521L - Predictive Modeling and Statistical Learning

Course Description

An introduction to statistical learning methods for prediction and inference. Topics include exploratory data analysis and visualization, linear and generalized linear models, model selection, penalized estimation and shrinkage methods including Lasso, ridge regression and Bayesian regression, regression and classification based on decision trees, Bayesian Model Averaging and ensemble methods, and time permitting, smoothing splines, support vector machines, neural nets or other advanced topics. The R programming language and applications used throughout.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA522 - Study Design: Design of Surveys and Causal Studies

Course Description

Investigation of study designs collecting data and their implications for statistical inference. Design and analysis of surveys of populations, including stratification, clustering, multi-stage sampling, design-based inference, considerations when analyzing convenience samples and big data. Design and analysis of causal studies including randomized experiments, blocking, fractional factorial designs, non-randomized studies, propensity score analysis. Applications involving big data, health, policy, natural and social sciences. Not open to students who have taken Statistical Science 322. Recommended prerequisite: Statistical Science 210, 521L, or an equivalent course.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA523L - Programming for Statistical Science

Course Description

Statistical programming, computation using selected languages (Python, R, Matlab, and/or C/C++) & interfaces with custom code development for statistical models. Best practices and software development for reproducible results, selecting topics from markup languages, data structures, design of graphics, object-oriented programming, vectorized code, scoping, documenting code, profiling and debugging, building modular code, and version control, all in contexts of applied statistical analyses. Instructor consent is required.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA531 - Advanced Bayesian Inference and Stochastic Modeling

Course Description

Art and science of building graphical models and stochastic simulation methods for inference and prediction. Mixture models, networks, and other latent variable probability models, i.e. hidden Markov models. Review of discrete and continuous multivariate distributions used in building graphical models, tools of linear algebra and probability calculus. Aspects of Monte Carlo methodology and related dynamical modeling theory. Statistical computing using Matlab or R. Instructor consent required. Prerequisites: Statistics 521L, 523L, 601.

Grading Basis

Graded

Units

Min Units:

3

Max Units:

3

General Education Curriculum Codes

QS - (QS) Quantitative Studies

STA532 - Theory of Statistical Inference

Course Description
Core mathematical foundations of classical and Bayesian statistical inference. Theory of point and interval estimation and testing based on efficiency, consistency, sufficiency and robustness. Maximum likelihood, moments and non-parametric methods based on exact or large sample distribution theory; associated EM, asymptotic normality and bootstrap computational techniques. Theoretical aspects of objective Bayesian inference, prediction, and testing. Selected additional topics drawn from, for example, multiparameter testing, contingency tables, multiplicity studies. Instructor consent required. Recommended prerequisite: Statistical Science 521L, 523L, 601.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA540L - Case Studies in Statistical and Data Science

Course Description
Students apply statistical analysis skills to in-depth data analysis projects in a variety of areas of application. Students design and implement a data analysis plan based on substantive questions or hypotheses and communicate their results both technically and non-technically in oral presentations and written reports. Prerequisite: Statistical Science 360L, 602L, or 702L. Not open to students who have taken Statistical Science 440L or Statistical Science 723.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA542 - Introduction to Time Series Analysis

Course Description
This is an introductory course in time series analysis with a focus on applications. Two basic approaches, including time domain and frequency domain methods, will be covered. A modern time-frequency analysis approach to study nonstationary time series analysis will also be introduced. The main goal is to guide the students to appreciate the main issues involved in time series analysis and solve practical challenges, particularly those coming from the high-frequency and ultra-long biomedical time series. The primary audience for this course is graduate students in statistics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

STA561D - Probabilistic Machine Learning

Course Description
Introduction to concepts in probabilistic machine learning with a focus on discriminative and hierarchical generative models. Topics include directed and undirected graphical models, kernel methods, exact and approximate parameter estimation methods, and structure learning. Prerequisite: Linear algebra, Statistical Science 250 or Statistical Science 611.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE682D PROBABILISTIC MACHINE LEARNING, COMPSCI571D PROBABILISTIC MACHINE LEARNING

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA563 - Information Theory

Course Description
Information theory is the science of processing, transmitting, storing, and using information. This course provides an introduction to mathematical measures of information and their connection to practical problems in communication, compression, and inference. Entropy, mutual information, lossless data compression, channel capacity, Gaussian channels, rate distortion theory, Fisher information. Useful for researchers in a variety of fields, including signal processing, machine learning, statistics, and neuroscience. Appropriate for beginning graduate students in electrical engineering, computer science, statistics, and math with a background in probability.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE587 INFORMATION THEORY

STA571 - Advanced Stochastic Modeling and Machine Learning

Course Description
Art and science of building advanced probabilistic models. EM and stochastic based algorithms will be discussed in detail for inference and prediction. Topics include mixture models and latent variable models, i.e. hidden Markov models. Review of discrete and continuous multivariate distributions used in building graphical models, tools of linear algebra and probability calculus. Aspects of Monte Carlo methodology and related dynamical modeling theory and algorithms/computation. Understanding why and when models and methods work or break will be a focus. Prerequisite: Statistical Science 602L or 702L, and Statistical Science 532.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA581 - ProSeminar: Becoming a Statistical Scientist

Course Description
Statistical paradigms and current directions, communication of statistical ideas and arguments, statistical ethics, overview of study designs, building a statistical network, professional societies, developing a web/social media presence, career paths. Instructor consent required.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

STA582 - Spring Proseminar

Course Description
Course for weekly Master's-level seminar series in Statistical Science.

Grading Basis
No Grade Associated

Course Typically Offered
Spring Only

Units

Min Units:
0

Max Units:
0

STA583 - Communicating Statistics and Data Science

Course Description
Communication is a critical yet often overlooked part of data science and statistics. This one-credit course aims to help second-year Master's students develop and practice their statistical communications skills as they prepare for their Portfolio of Work. Through interactive sessions, students will learn how to communicate complex data issues effectively, gain experience in explaining and interpreting results clearly and concisely to a diverse range of stakeholders, and create professional-quality reports and presentations, all in a supportive and welcoming peer review environment. This course is mandatory for all portfolio students and may also be taken by thesis or Capstone students.

Grading Basis
Credit / No Credit

Course Typically Offered
Spring Only

Units

Min Units:
1

Max Units:
1

STA602L - Bayesian Statistical Modeling and Data Analysis

Course Description
Principles of data analysis and modern statistical modeling. Exploratory data analysis. Introduction to Bayesian inference, prior and posterior distributions, hierarchical models, model checking and selection, missing data, introduction to stochastic simulation by Markov chain Monte Carlo using a higher level statistical language such as R or Matlab. Applications drawn from various disciplines. Not open to undergraduate students or students who have taken Statistical Science 360. Recommended prerequisite: Statistical Science 611 or the following: Statistical Science 210 and (Statistical Science 230 or 240L) and (Mathematics 202, 202D, 212, or 222) and (Mathematics 216, 218, or 221, any of which may be taken concurrently).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA610L - Multilevel and Hierarchical Models

Course Description
Variance component models with fixed and random effects. Multilevel and hierarchical models for longitudinal and/or clustered data. Focus on model fitting and interpretation. Maximum likelihood and Bayesian inference and computation. Prerequisite: Statistical Science 360, 601, or 602L. Recommended prerequisite: R programming skills. Not open to students who have taken Statistical Science 410L.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA611 - Introduction to Mathematical Statistics

Course Description
Formal introduction to basic theory and methods of probability and statistics: probability and sample spaces, independence, conditional probability, and Bayes' theorem; random variables, distributions, moments, and transformations. Parametric families of distributions and central limit theorem. Sampling distributions, traditional methods of estimation, and hypothesis testing. Elements of likelihood and Bayesian inference. Basic discrete and continuous statistical models. Not open to students who have credit for or are taking Statistical Science 230, 231, 240, 250, or 432. Not open to undergraduate students. Does not count towards the MS in Statistical Science degree.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA612D - Numerical Analysis

Course Description
Error analysis, interpolation and spline approximation, numerical differentiation and integration, solutions of linear systems, nonlinear equations, and ordinary differential equations. Prerequisites: knowledge of an algorithmic programming language, intermediate calculus including some differential equations, and Mathematics 221.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI520D NUMERICAL ANALYSIS, MATH565D NUMERICAL ANALYSIS

General Education Curriculum Codes
R - (R) Research, QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA613 - Statistical Methods for Computational Biology

Course Description
Methods of statistical inference and stochastic modeling with application to functional genomics and computational molecular biology. Topics include: statistical theory underlying sequence analysis and database searching; Markov models; elements of Bayesian and likelihood inference; multivariate high-dimensional regression models, applied linear regress analysis; discrete data models; multivariate data decomposition methods (PCA, clustering, multi-dimensional scaling); software tools for statistical computing. Prerequisites: multivariate calculus, linear algebra and Statistical Science 611.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CBB540 STAT MTHDS/COMPUTATIONAL BIOLG

STA621 - Applied Stochastic Processes

Course Description
An introduction to stochastic processes without measure theory. Topics selected from: Markov chains in discrete and continuous time, queuing theory, branching processes, martingales, Brownian motion, stochastic calculus. Prerequisite: Mathematics 230 or Mathematics 340 or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH541 APPLIED STOCHASTIC PROC

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA623 - Statistics and Decision Analysis

Course Description
Course coverage includes foundations, probability modelling for inference and prediction, utility/loss function development, numerical methods for evaluating decisions, examples in business, finance, economics, medical decision making, and other areas. The course treats statistical model parameter estimation and testing as decision problems, statistical design as decision analysis, links of probabilistic forecasting and decision analysis, Bayesian analysis in decision problems, theory and numerical algorithms for optimisation, and examples in application of decision analysis to real-world problems. Prerequisite: MATH 218 (or equivalent), STA 360/601, and STA 532 (or 732).

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QS - (QS) Quantitative Studies

STA640 - Causal Inference

Course Description
Statistical issues in causality and methods for estimating causal effects. Randomized designs and alternative designs and methods for when randomization is infeasible: matching methods, propensity scores, longitudinal treatments, regression discontinuity, instrumental variables, and principal stratification. Methods are motivated by examples from social sciences, policy and health sciences. Prerequisite: Statistical 521L or 721.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA641 - Statistical Learning and Bayesian Nonparametrics

Course Description
Nonparametric Bayesian models and methods for complex data analyses with non-linearity adjustment, flexible borrowing of information, local uncertainty quantification and interaction discovery. Focuses on computationally and theoretically efficient nonparametric regression techniques based on advanced Gaussian process models, with motivating applications in causal inference and big data genomics. Includes several illustrative examples with R codes. Basic coverage of asymptotic theory and MCMC and greedy algorithms. Prerequisite: Statistics 531, 532, 523L.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QS - (QS) Quantitative Studies

STA642 - Time Series and Dynamic Models

Course Description
Statistical models for modeling, monitoring, assessing and forecasting time series. Univariate and multivariate dynamic models; state space modeling approaches; Bayesian inference and prediction; computational methods for fast data analysis, learning and prediction; time series decomposition; dynamic model and time series structure assessment. Routine use of statistical software for time series applications. Applied studies motivated by problems and time series data from a range of applied fields including economics, finance, neuroscience, climatology, social networks, and others. Instructor consent required. Prerequisite: Statistical Science 532 or 732.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA643 - Modern Design of Experiments

Course Description
With breakthroughs in scientific computing, complex phenomena can now be reliably simulated or experimented on. However, these experiments are often expensive, and a key challenge is the design of such experiments to facilitate scalable and timely decision making. This course introduces experimental design methods for physical and computer experiments, Bayesian sampling and optimization, A/B testing and multi-armed bandits, and big data analytics. Emphasis is placed on understanding methodology and implementation for practical applications. Students should be comfortable with mathematical statistics at the level of STA 532/732 and Bayesian modeling at the level of STA 601L/602L/531.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA644L - Statistical Modeling of Spatial and Time Series Data

Course Description
Introduction to Bayesian modeling for data with spatial and/or time dependence. Exploratory analysis of spatial (point referenced and areal) and time series data. Gaussian processes and generalizations. Extending hierarchical Bayesian linear models and generalized linear models. Spatial models: CAR, SAR, kriging and time series models: ARM, ARMA, dynamic linear models. Computational methods for model fitting and diagnostics. Prerequisite: Statistical Science 360 or 601/602L or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research, QS - (QS) Quantitative Studies

STA650L - Theory and Methods for the Analysis of Social Networks

Course Description
Introduction to basic principles of analyzing relational data. Consider deterministic and probabilistic specifications of networks and graphs, studying structural blockmodels, the Erdos-Renyi model, the exponential random graph model, the stochastic blockmodel, generalizations to latent space models and to more complex relational data. Development of these models and practical understanding of how to fit them. There is no book, lectures will be supplemented with discussions of relevant papers. Prerequisite: Statistical Science 601 or 602L. Corequisite: Statistical Science 532 or 732.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QS - (QS) Quantitative Studies

STA663L - Statistical Computing and Computation

Course Description
Statistical modeling and machine learning involving large data sets and challenging computation. Data pipelines and data bases, big data tools, sequential algorithms and subsampling methods for massive data sets, efficient programming for multi-core and cluster machines, including topics drawn from GPU programming, cloud computing, Map/Reduce and general tools of distributed computing environments. Intense use of statistical and data manipulation software will be required. Data from areas such as astronomy, genomics, finance, social media, networks, neuroscience. Instructor consent required. Prerequisite: Statistics 521L, 523L; Statistics 532 (or co-registration).

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA671D - Theory and Algorithms for Machine Learning

Course Description
This is an introductory overview course at an advanced level. Covers standard techniques, such as the perceptron algorithm, decision trees, random forests, boosting, support vector machines and reproducing kernel Hilbert spaces, regression, K-means, Gaussian mixture models and EM, neural networks, and multi-armed bandits. Covers introductory statistical learning theory. Recommended prerequisite: linear algebra, probability, analysis or equivalent.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
COMPSCI671D THEORY & ALG MACHINE LEARNING, ECE687D THEORY & ALG MACHINE LEARNING

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum, QS - (QS) Quantitative Studies

STA690 - Special Topics in Statistics

Course Description
Various special topics in statistics. Recommended prerequisite: Statistical Science 611

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

STA693 - Research Independent Study

Course Description
Directed reading and research for master's students. Consent of instructor and director of master's program required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
R - (R) Research

STA698 - Capstone Project

Course Description
The goal for this year-long capstone is for students to be integrated into world-class interdisciplinary research projects that can solve real-life problems and significantly advance through data science. Guided by a faculty advisor, each student will work with a client (e.g. a company, government agency, or nonprofit) on this research project. The project will provide opportunities to hone students teamwork, project management, creative problem solving, and communication skills as they apply and further develop their data science expertise. The final deliverables will be evaluated by faculty and relevant stakeholders. Open to students in the Statistical Science Master's Program only.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
QC - (QC) Quant & Comp Reasoning: A&S Curriculum

STA701S - Statistical Science Graduate Research Seminar

Course Description
Advanced seminar on topics at research frontiers in statistical sciences.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

STA702L - Bayesian Statistical Modeling and Data Analysis

Course Description
Introduction to Bayesian inference, prior and posterior distributions, predictive distributions, hierarchical models, model checking and selection, missing data, introduction to stochastic simulation by Markov Chain Monte Carlo using a higher level statistical language such as R or Matlab. Applications drawn from various disciplines. Not open to students with credit for Statistical Science 360. Prerequisite: Statistical Science 210, 230 or 240 and 432, or 611 or other close equivalents.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

STA711 - Probability and Measure Theory

Course Description
Introduction to probability spaces, the theory of measure and integration, random variables, and limit theorems. Distribution functions, densities, and characteristic functions; convergence of random variables and of their distributions; uniform integrability and the Lebesgue convergence theorems. Weak and strong laws of large numbers, central limit theorem. Prerequisite: elementary real analysis and elementary probability theory.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

STA715 - Stochastic Models

Course Description
This course is an introduction to the theory of stochastic processes. The course begins with a review of probability theory and then covers Poisson processes, discrete-time Markov chains, martingales, continuous-time Markov chains, and renewal processes. The course also focuses on applications in operations research, finance, and engineering. No prior knowledge of measure theory is required. However, the focus of the course is on the mathematics and proofs are emphasized. Prerequisites: at least a one-semester calculus-based course in probability (MATH340/STAT230 or equivalent). A background in real analysis is helpful. Instructor consent is required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BA915 STOCHASTIC MODELS, MATH742 STOCHASTIC MODELS

STA721L - Linear Models

Course Description
Multiple linear regression and model building. Exploratory data analysis techniques, variable transformations and selection, parameter estimation and interpretation, prediction, Bayesian hierarchical models, Bayes factors and intrinsic Bayes factors for linear models, and Bayesian model averaging. The concepts of linear models from Bayesian and classical viewpoints. Topics in Markov chain Monte Carlo simulation introduced as required. Recommended prerequisite: Statistical Science 611. Recommended co-requisite: Statistical Science 602L, 702L or equivalent.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MATH743L LINEAR MODELS

STA723 - Case Studies in Bayesian Statistics

Course Description
Advanced Bayesian statistical modelling from an applied perspective; problems and data from a range of application areas; focus on statistical thought and practice with in-depth examination of applications; statistical topics drawn from multilevel modelling, randomization and experimental design, causal inference, meta analysis, item response models, models for categorical data, time series, model assessment and criticism, scientific communication. Instructor consent required. Recommended prerequisites 602, 702L or equivalent and STA721L.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

STA725 - Bayesian Health Data Science

Course Description
This course will teach students to analyze biomedical data using Bayesian inference, focusing on real-world data like electronic health records, wearables, and imaging. It covers hierarchical models for complex data, including missing, spatial, and longitudinal data. Students will also learn Bayesian machine learning techniques, such as regularization for high-dimensional data and scalable inference methods like variational inference. Additional topics may include causal inference, meta-analysis, and time-to-event data. The course combines mathematical theory with practical skills in R and Stan, preparing students to address complex biomedical research problems using Bayesian methods.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

STA732 - Statistical Inference

Course Description
Classical, likelihood, and Bayesian approaches to statistical inference. Foundations of point and interval estimation, and properties of estimators (bias, consistency, efficiency, sufficiency, robustness). Testing: Type I and II errors, power, likelihood ratios; Bayes factors, posterior probabilities of hypotheses. The predictivist perspective. Applications include estimation and testing in normal models; model choice and criticism. Prerequisite: Statistical Science 611 and 831 or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

STA741 - Compressed Sensing and Related Topics

Course Description
Introduction to the basic compressed sensing problems and methodologies, including the recovery of sparse vectors and low-rank matrices using methods based on convex optimization and approximate message passing. Unified theoretical framework for the analysis of certain CS problems, drawing upon ideas from statistical decision theory, high-dimensional convex geometry, information theory, convex optimization, message passing and variational inference with graphical models, and the replica method from statistical physics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ECE741 COMPRESSED SENSING

STA771S - Teaching Statistics: Instruction, Pedagogy, and Curriculum Development

Course Description

This course is designed to help students become better teachers and communicators of statistics, learn about and discuss pedagogy, gain experience with practice teaching, and improve via individual feedback. Course will be divided into three parts: Being a TA: office hours, computing labs, and grading; developing and leading a class: writing a syllabus, lecturing, active learning, integrating technology; preparing students for the next stage: writing teaching statements and giving talks. The course will be based primarily on discussion, practice teaching, and feedback. Counts as one of the two pedagogy courses required for The Graduate School's certificate in college teaching.

Grading Basis

Graded

Course Typically Offered

Spring Only

Units

Min Units:

1

Max Units:

1

STA772S - Mentoring Undergraduate STEM Research

Course Description

Provides new mentors of undergraduate STEM researchers with evidence-based practices, tools and techniques for effectively mentoring undergraduate researchers as individuals or as part of a vertically-integrated research team. While actively mentoring one or more undergraduate researchers, build a mutually supportive learning community of mentors. Course activities will include discussion, case studies, readings, and reflective writing, as well as practice of the techniques covered during the semester. Students must have an undergraduate STEM researcher and project to mentor during the course.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

STA790 - Special Topics in Statistics

Course Description

Prerequisite: Statistical Science 611 or consent of instructor. Credit/ No Credit grading only.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

STA798 - Capstone Project

Course Description

The goal for this year-long capstone is for students to be integrated into world-class interdisciplinary research projects that can solve real-life problems and significantly advance through data science. Guided by a faculty advisor, each student will work with a client (e.g. a company, government agency, or nonprofit) on this research project. The project will provide opportunities to hone students teamwork, project management, creative problem solving, and communication skills as they apply and further develop their data science expertise. The final deliverables will be evaluated by faculty and relevant stakeholders. Only open to Statistical Science Masters.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:
3

Max Units:
3

STA831 - Probability and Statistical Models

Course Description
Theory, modeling, and computational topics in probability and statistics: distribution theory and modeling, simulation and applied probability models in statistics. Monte Carlo method and integration; Markov Chain Monte Carlo methods; applied stochastic processes including Markov process theory, linear systems theory, and AR models. Latent variable probability models, i.e., mixture models, hidden Markov models, and missing data problems. Discrete and continuous multivariate distributions; graphical models; tools of linear algebra and probability calculus. Statistical computing using Matlab/R. Prerequisite: Statistical Science 702L and 721L. Recommended prerequisite: Statistical Science 732.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

STA832 - Multivariate Statistical Analysis

Course Description
Classical and modern statistical methods for the analysis of multivariate data. Topics include: exploratory data analysis via matrix and tensor factorizations, linear and multilinear models for vector, matrix and tensor-valued data, group invariance approaches to estimation and testing, copula models for non-Gaussian data, and high-dimensional multivariate regression and covariance estimation. Prerequisite: Statistical Science 732.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

STA841 - Models and Methods for Categorical Data

Course Description
This course covers statistical methods for analyzing categorical data. Model and theory includes: generalized linear models, including models for binary data, polytomous data (ordered and unordered), counts, contingency tables, matrix and graphical data. Classical and Bayesian inference in these models involves: latent variable representations, conditional likelihood, profile likelihood, and iterative algorithms. More advanced methods include: analysis of repeated measurements, data with cluster structure, nonparametric analysis, adaptive testing in contingency tables, multiple testing and data analysis in high-dimensions. Prerequisite: Statistical Science 521L or 721 and Statistical Science 532 or 732, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

STA863 - Advanced Statistical Computing

Course Description
Advanced numerical methods and algorithms for statistical computing, emphasizing techniques relevant to modern Bayesian statistical research. Topics drawn from: numerical linear algebra, optimization, advanced Monte Carlo simulation and integration, approximate Bayesian computation, variational methods, belief propagation, distributed computing, and other areas of current research. Prerequisite: Statistical Science 831, 832.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

STA891 - Topics for Preliminary Exam Preparation in Statistical Science

Course Description
Directed readings in preparation for the PhD preliminary exam. Prerequisite: Core courses Statistical Science 702, 711, 721, 723, 732, and 831.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

STA901S - Statistical Science Seminar

Course Description
Course for the weekly seminar series in Statistical Science. Required for Statistical Science Ph.D. students.

Grading Basis
No Grade Associated

Course Typically Offered
Fall and/or Spring

Units

Min Units:
0

Max Units:
0

STA915 - High-Dimensional Statistics and Machine Learning

Course Description
The goal of this course is to provide motivated Ph.D. and master's students with background knowledge of high-dimensional statistics/machine learning for their research, especially in their methodology and theory development. Discussions cover theory, methodology, and applications. Selected topics in this course include the basics of high-dimensional statistics, matrix and tensor modeling, concentration inequality, nonconvex optimization, applications in genomics, and biomedical informatics. Knowledge in probability, inference, and basic algebra are required.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOSTAT915 HIGH-DIMENSIONAL STATISTICS, COMPSCI762 HIGH-DIMENSIONAL STATISTICS

STA932 - Advanced Mathematical Statistics and Probability Theory

Course Description
This course reviews concepts and tools of advanced mathematical analyses of statistical methods. Topics include empirical process theory, minimax theory and concentration of measures for high dimensional problems, random matrix theory, sparse estimation theory, asymptotic theory of nonparametric Bayesian methods, empirical Bayesian theory, stochastic process modeling, diffusion process theory, optimization, etc. The course emphasizes on the duality of Bayesian and frequentist approaches and explores benefits arising from their synthesis. It will introduce advanced topics in probability theory, functional analysis, and topology as needed.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

STA941 - Bayesian Nonparametric Models and Methods

Course Description
Modern nonparametric approaches to statistical analysis. Infinite dimensional Bayesian models: data analysis, inference and prediction. Models of curves, surfaces, probability distributions, partitions and latent feature spaces; nonparametric density estimation, regression and classification; hierarchical, multivariate and functional data analysis models; theory of estimation in function spaces. Methodology of probabilistic process models: Dirichlet, Gaussian, basis/kernel expansion, splines, wavelets, support vector machines and other local regression models. Interfaces of Bayesian:non-Bayesian methods and additional methodological topics. Prerequisite: Statistical Science 732 and 831.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

STA942S - Time Series and Forecasting

Course Description
Advanced topics in time series modelling and forecasting in a reading/seminar-style format. Topics include dynamic state-space models and their applications, Bayesian learning and forecasting, statistical model developments motivated by forecasting applications in many fields, and advanced topics interfacing with current research frontiers. Instructor consent required. Prerequisite: Statistical Science 732 and 831. Recommended prerequisite: Statistical Science 642.

Grading Basis
Credit / No Credit

Course Typically Offered
Occasionally

Units

Min Units:
1

Max Units:
1

STA944 - Spatial Statistics

Course Description
Modeling data with spatial structure; point-referenced (geo-statistical)data, areal (lattice) data, and point process data; stationarity, valid covariance functions; Gaussian processes and generalizations; kriging; Markov random fields (CAR and SAR); hierarchical modeling for spatial data; misalignment; multivariate spatial data, space/time data specification. Theory and application. Some assignments will involve computing and data analysis. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

STA961 - Stochastic Processes

Course Description
Conditional probabilities and Radon-Nikodym derivatives of measures; tightness and weak convergence of probability measures, measurability and observability. Markov chains, Brownian motion, Poisson processes. Gaussian processes, birth-and-death processes, and an introduction to continuous-time martingales. Prerequisite: Statistical Science 711 and 732.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

STA993 - Independent Study

Course Description
Directed reading and research. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

STA994 - Independent Study

Course Description
Directed reading and research. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
1

Max Units:
4

STA995 - Internship

Course Description
Students gain practical experience in statistical applications through internships in industry or government. Requires prior consent from the student's advisor and the director of graduate studies. A final report acceptable to the advisor outlining work activity, statistical aspects of the internship, and possible follow-up projects is required. May be repeated with the consent of the advisor and the director of graduate studies.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall, Spring and Summer

Units

Min Units:
1

Max Units:
1

STA996 - Spring or Fall Internship

Course Description

Open to graduate students engaging in practical experience in statistical applications through internships in industry or government during Spring or Fall semesters. A final report outlining work activity, statistical aspects of the internship, and possible follow-up projects is required. Requires consent from the related Program Director. An internship is available to graduate students if it allows them to gain practical experience in a work environment related to their academic training and enhances their overall academic experience and, for students on an F-1 Visa, their employment prospects once they return to their home country. Credit/no credit grading only.

Grading Basis

Credit / No Credit

Course Typically Offered

Fall and/or Spring

Units

Min Units:

1

Max Units:

1

STA690-1 - Special Topics in Statistics

Course Description

Various special topics in statistics.

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

STA690-40 - Topics in Probability Theory

Course Description

Probability tools and theory, geared towards topics of current research interest. Possible additional prerequisites based on course content in a particular semester. Prerequisites: Mathematics 230 or 340 or equivalent, and consent of instructor.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

MATH690-40 TOPICS IN PROBABILITY

STA790-1 - Special Topics in Statistics

Grading Basis

Credit / No Credit

Course Typically Offered

Occasionally

Units

Min Units:

1

Max Units:

1

SWAHILI701 - Introductory Swahili 1

Course Description
Swahili is spoken by tens of millions of people worldwide, primarily in East and Southern Africa. This course provides an introduction to the basic elements of Swahili language and cultures as well as developing skills in listening, speaking, reading and writing. Course taught at University of Virginia, via Zoom. No prerequisite.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

SWAHILI702 - Elementary Swahili 2

Course Description
The course develops and expands elements acquired in Swahili 701, providing a more thorough introduction to Swahili language skills in listening, speaking, reading and writing. Course taught at University of Virginia, via Zoom. Prerequisite: Swahili 701 or students with equivalent Swahili language experience should contact the instructor for a permission code.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

SWAHILI703 - Intermediate Swahili

Course Description
This course is an intermediate level course designed to further enhance communicative skills, as well as develop an awareness of the cultural diversity of the Swahili-speaking areas of East Africa through Swahili texts. Course taught at University of Virginia, via Zoom. Prerequisite: Swahili 702 or equivalent Swahili language experience.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

SWAHILI704 - Intermediate Swahili 2

Course Description
This course is the second part of the intermediate sequence, which further develops communication skills, as well as an awareness of the cultural diversity of the Swahili-speaking areas of East Africa. Readings are drawn from a range of literary and journalistic materials. Course taught at University of Virginia, via Zoom. Prerequisite: Swahili 703 or equivalent Swahili language experience.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

THEATRST550S - Black Culture and Performance

Course Description
What is black embodiment? Black feeling? Black performance? This course explores these questions, among others, by taking up three major cultural movements: New Negro/Harlem Renaissance; Black Arts Movement; and contemporary 'post-blackness.' We will study black drama, performance art, visual art, and film. Major writers and artists might include Marita Bonner, Zora Neale Hurson, Adrienne Kennedy, Alice Childress, Ntozake Shange, Amiri Baraka, Aleshea Harris, Brendan Jacobs-Jenkins, Barry Jenkins, and Jackie Sibblies Drury. We will also read theories of identity formation, racialized experience, and black life, among other prevailing concerns in Black (Performance) Studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS550S BLACK CULTURE & PERFORMANCE, ENGLISH550S BLACK CULTURE & PERFORMANCE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance

THEATRST558S - Business Strategies for the Arts and Artists

Course Description
Students will learn professional development skills specific to the artistic fields. Students/Artists will learn to develop business plans, write grant applications, learn negotiation skills, how to present their work to the public, develop artists statements, and develop/maintain websites and portfolios. The course will allow the student to sustain themselves as a practicing artist.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS558S BUSINESS STRATEGIES FOR ARTS, VMS558S BUSINESS STRATEGIES FOR ARTS, DOCST558S BUSINESS STRATEGIES FOR ARTS

General Education Curriculum Codes
R - (R) Research

THEATRST561S - Art as Work: Valuing Labor in the Arts

Course Description
Interdisciplinary seminar on work, working identities, and workplace performances in the arts. Enrolled graduates and advanced undergraduates review theories of artistic production, labor, and value across the analytical traditions of cultural labor studies, critical race and feminist studies, dance and performance studies. Analysis of dominant representations of arts labor and entrepreneurship from arts management, administration and policy discourse. Our goal is to highlight institutional pressures that constrain enabling environments for the arts. Culminating research projects analyze and interpret local arts workworlds, including but necessarily students' own.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE561S ART AS WORK, LIT525S ART AS WORK, ARTSVIS571S ART AS WORK, VMS571S ART AS WORK

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

THEATRST691 - Independent Study

Course Description
Individual directed study on advanced graduate level under supervision of a faculty member resulting in an academic or artistic product. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

THEATRST718S - Sound in Cinema: Sonic Theories in Film and Media

Course Description
Examination of historical and contemporary debates on the impact of sound in film and various media. Exploration of how artists, scholars, and theorists challenge conventional assumptions about the relationship between image and sound, and the normalized separation of elements that privilege visual over sonic experience. Analysis of sound's political, aesthetic, philosophical, and theoretical implications, and the impact of stylistic approaches to sound design and innovation. Graduate-level students are expected to delve deeper into sound's scholarly and conceptual aspects through original research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE718S SOUND IN CINEMA, VMS718S SOUND IN CINEMA, DOCST718S SOUND IN CINEMA

THEATRST776S - Modern Spectacles 1790–Present

Course Description
Drawing on landscape painting, theater, carnival, and scientific demonstration, modern spectacles immerse viewers in a particularly European imaginary of identity and otherness. This seminar addresses three periods: 19th-century boulevard spectacles (magic lantern, panorama, etc.); 20th-century habitat dioramas that present species and cultures in place and time; and contemporary installations that seek to recreate the 'spectacle experience' with new tools. Case studies are discussed in relation to themes that traverse period, including colonialism, magic, anti-modernism, urban lighting, and the experience of time. Graduate students will participate in the weekly seminar, write/present a midterm summary on their approach and topic, and write/present an original research paper.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST776S MODERN SPECTACLES

THEATRST590S-2 - Special Topics in Dramatic Writing

Course Description
Topics vary.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

THEATRST590S-3 - Special Topics in Design

Course Description
Topics vary by semester.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

TIBETAN701 - Elementary Tibetan I

Course Description
Introductory Tibetan language course for students who have little to no knowledge of Tibetan. Development of speaking, listening, reading, writing skills through Tibetan concepts, grammar and syntax of spoken and written Tibetan. Topics include situations of everyday life (e.g. greetings, introductions, family, habits/hobbies, making appointments, food, visiting friends, weather, shopping, etc.) as well as aspects of Tibetan people and culture (e.g. songs, short stories, etc.). Course taught at University of Virginia; Duke students participate through video conference and/or telepresence classroom.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

TIBETAN702 - Elementary Tibetan II

Course Description
Continuation of Tibetan 701. Prerequisite: Tibetan 701 or equivalent. Development of speaking, listening, reading, writing skills through Tibetan concepts, grammar and syntax of spoken and written Tibetan. Topics include situations of everyday life (e.g. greetings, introductions, family, habits/hobbies, making appointments, food, visiting friends, weather, shopping, etc.) as well as aspects of Tibetan people and culture (e.g. songs, short stories, etc.). Course taught at University of Virginia; Duke students participate through video conference and/or telepresence classroom.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

TIBETAN703 - Intermediate Tibetan I

Course Description
Intermediate skill-building in the grammar and syntax of spoken and written Tibetan, along with development of skills in listening, speaking, reading and writing through the integrated use of spoken and literary forms. Students will also enhance their knowledge of Tibetan culture in order to improve their communication skills. Course taught at University of Virginia; Duke students participate through video conference and/or telepresence classroom. Prerequisite: TIBETAN 102 Elementary Tibetan II or equivalent.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

TIBETAN704 - Intermediate Tibetan II

Course Description
Intermediate skill-building in the grammar and syntax of spoken and written Tibetan, along with development of skills in listening, speaking, reading and writing through the integrated use of spoken and literary forms. Students will also enhance their knowledge of Tibetan culture in order to improve their communication skills. Course taught at University of Virginia; Duke students participate through video conference and/or telepresence classroom. Prerequisite: TIBETAN 703 or equivalent.

Grading Basis
Graded

Units

Min Units:
4

Max Units:
4

TURKISH690S - Special Topics in Turkish Studies

Course Description
Special Topics in Turkish Studies. Topics vary by course or section.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

UPE701 - Ecological Perspectives: Evolution to Ecosystems

Course Description
This course surveys core concepts in evolutionary and ecosystems ecology, and it challenges students to develop intersections and creative syntheses across those disciplines.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BIOLOGY841 EVOLUTION TO ECOSYSTEMS, ENVIRON841 EVOLUTION TO ECOSYSTEMS, EVANTH741 EVOLUTION TO ECOSYSTEMS

UPE702 - Ecological Perspectives: Individuals to Communities

Course Description
This course surveys core concepts in Physiological/Behavioral/Population Ecology and Community Ecology, and it challenges students to develop intersections and creative syntheses across those disciplines.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
BIOLOGY842 INDIVIDUALS TO COMMUNITIES, ENVIRON842 INDIVIDUALS TO COMMUNITIES, EVANTH742 INDIVIDUALS TO COMMUNITIES

UPE703S - Ecology Seminar

Course Description
Presentation of current research by invited speakers, faculty, and students in the University Graduate Program in Ecology.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

Crosslisted Courses
BIOLOGY711S ECOLOGY SEMINAR, ENVIRON702S ECOLOGY SEMINAR, EVANTH743S ECOLOGY SEMINAR

UPE732 - Food Web Theory

Course Description
This class covers the fundamentals of Food Web Theory and their connections to modern takes on the discipline while also having a component of mathematical modeling, coding (in R and Mathematica), paper discussions, and visits from prominent Food Web Ecologists.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY732 FOOD WEB THEORY, EVANTH732 FOOD WEB THEORY, ENVIRON743 FOOD WEB THEORY

UPGEN522 - Critical Readings in Genetics and Genomics

Course Description
Classical and molecular genetic approaches to understanding eukaryotic cell function using unicellular organisms such as yeasts. Experimental approaches as well as illustrative studies of secretion, cell cycle, signal transduction, and cytoskeleton. Discussion of current literature and student presentations.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MGM522 CRITICAL READINGS IN GENETICS

UPGEN640 - Quantitative Approaches to Biological Problems: From Cartoon Models to System Behavior

Course Description
This class is aimed at biologists who want to gain an appreciation of how mathematical approaches can supplement experimental approaches. We will teach you how to convert cartoon diagrams to differential equations, and re-familiarize you with some basic concepts from math and physics that help us develop a better intuition of how the world works. Then we will discuss how quantitative approaches can yield insights into how control systems behave. The class will use calculus at an elementary level and an occasional computer simulation, but we will focus more on concepts and applications.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMB640 QUANT APPROACH BIO PROBLEMS

UPGEN658 - Structural Biochemistry I

Course Description
Principles of modern structural biology. Protein-nucleic acid recognition, enzymatic reactions, viruses, immunoglobulins, signal transduction, and structure-based drug design described in terms of the atomic properties of biological macromolecules. Discussion of methods of structure determination with particular emphasis on macromolecular X-ray crystallography NMR methods, homology modeling, and bioinformatics. Students use molecular graphics tutorials and Internet databases to view and analyze structures. Prerequisites: organic chemistry and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM658 STRUCTURAL BIOCHEMISTRY I, CMB658 STRUCTURAL BIOCHEMISTRY I, CELLBIO658 STRUCTURAL BIOCHEMISTRY I, SBB658 STRUCTURAL BIOCHEMISTRY I, CBB658 STRUCTURAL BIOCHEMISTRY I

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

UPGEN659 - Structural Biochemistry II

Course Description
Continuation of Biochemistry 658. Structure/function analysis of proteins as enzymes, multiple ligand binding, protein folding and stability, allostery, protein-protein interactions. Prerequisites: Biochemistry 658, organic chemistry, physical chemistry, and introductory biochemistry.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
2

Max Units:
2

Crosslisted Courses
BIOCHEM659 STRUCTURAL BIOCHEMISTRY II, CELLBIO659 STRUCTURAL BIOCHEMISTRY II, CBB659 STRUCTURAL BIOCHEMISTRY II, SBB659 STRUCTURAL BIOCHEMISTRY II

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

UPGEN660 - Evolution from a Coalescence Perspective

Course Description
Survey of theoretical and empirical aspects of modern population genetics in the post-coalescence era. Coincident with the development of coalescence theory, evolutionary biology began a profound and pervasive transformation. This course presents the basics of coalescence theory. It builds upon this perspective to address an array of summary statistics and inference methods developed for the analysis of genomic data.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOLOGY660 COALESCENCE AND EVOLUTION

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum, NS - (NS) Natural Sciences

UPGEN668 - RNA Biology: Co-Transcriptional and Post-Transcriptional Control of Gene Expression

Course Description
Explores various aspects of RNA biology and function. Topics will include splicing, translation, RNA: Protein interactions, non-coding RNAs, RNA modifications, viral RNA regulation, RNA structure-function relationships, and RNA-targeted drug discovery. Students will also learn about the major techniques used in RNA research, including in vitro and in vivo methods for understanding global RNA regulation. The format will be a combination of weekly lectures which will also include discussion of primary literature. Students will be evaluated based on their participation and performance during in-class presentations. Students will also write a short mock research grant on a topic of their choosing.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
BIOCHEM668 RNA BIOLOGY, CELLBIO668 RNA BIOLOGY

General Education Curriculum Codes
NW - (NW) Investigating Natural World: A&S Curriculum

UPGEN700 - Critical Skills in Scientific Presentation

Course Description
This is a required course for first year UPGEN program students (and is limited to only those students). In this course, students will focus on communicating science effectively to their peers. This course has a large peer to peer interaction component. Grading is based on class participation and a final 'exam' which consists of an oral presentation. This course also has a career development component, consisting of a panel discussion with senior students in the UPGEN program on choosing a thesis lab, an overview of the preliminary exam process, and a panel discussion with UPGEN program alumni who have chosen diverse career paths.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
2

Max Units:
2

UPGEN701 - Advanced Topics in Genetics and Genomics

Course Description
Course open only to first year UPGG graduate class. Weekly discussion of current literature in genetics (Fall semester) and genomics (Spring semester). Permission of instructor required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
2

Max Units:
2

UPGEN702 - Papers and Grant Writing Workshop

Course Description
Introduction to grant and fellowship writing; writing assignment of two proposal topics; evaluation and critique of proposal by fellow students. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MGM702 SCIENTIFIC WRITING

UPGEN711 - Succeeding in Graduate School in the Biological Sciences

Course Description
Weekly lecture presentation on choosing a thesis advisor, the grant proposal and scientific manuscript peer review processes, and other topics related to succeeding in graduate school.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

Crosslisted Courses
BIOLOGY701 GRADUATE SCHOOL 101, EVANTH705 GRADUATE SCHOOL 101

UPGEN712 - Succeeding Beyond Grad School: Career Options with a PhD in the Biological Sciences

Course Description
Weekly lecture presentation on preparing academic job applications, alternative careers in the biological sciences and other topics related to succeeding beyond graduate school.

Grading Basis
Credit / No Credit

Units

Min Units:
0.5

Max Units:
0.5

Crosslisted Courses
BIOLOGY702 SUCCEEDING BEYOND GRAD SCHOOL, EVANTH706 SUCCEEDING BEYOND GRAD SCHOOL

UPGEN716S - Genetics Student Research

Course Description
Presentations by genetics program students on their current research. Required course for all graduate students specializing in genetics. Credit grading only.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

UPGEN732 - Human Genetics

Course Description
Topics include genetic mechanisms of disease (rare and common genetic risk variants, multi-factorial inheritance, epigenetics, cytogenetics), as well as disease-specific examples including neurogenetics, cancer genetics, pharmacogenetics, complex diseases and gene therapy. Lectures plus weekly discussion of assigned papers from the research literature. Prerequisite: University Program in Genetics 778 (or any individual University Program in Genetics 778A-F module) or completion of the first-year Medical Scientist Training Program (MTSP) curriculum, or consent of instructor.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
MGM732 HUMAN GENETICS

UPGEN750S - Genetics Colloquium

Course Description
Lectures, discussion sections, and seminars on selected topics of current interest in genetics. Required of all students specializing in genetics. Prerequisite: a course in genetics.

Grading Basis
Credit / No Credit

Course Typically Offered
Fall and/or Spring

Units

Min Units:
1

Max Units:
1

UPGEN778A - University Program in Genetics and Genomics Biological Solutions Module I

Course Description
One of six mini-courses offered sequentially during the fall semester and together cover 24 topics. These courses are part of the core offerings of the University Program in Genetics and Genomics and allow maximum flexibility for a student-designed curriculum. Multiple topics are available during each mini-course and students choose one. The topics address everything from fundamentals of genetics to modern molecular genetic and genomic strategies for the analysis of a variety of biological systems.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

UPGEN778B - University Program in Genetics and Genomics Biological Solutions Module II

Course Description
One of six mini-courses offered sequentially during the fall semester and together cover 24 topics. These courses are part of the core offerings of the University Program in Genetics and Genomics and allow maximum flexibility for a student-designed curriculum. Multiple topics are available during each mini-course and students choose one. The topics address everything from fundamentals of genetics to modern molecular genetic and genomic strategies for the analysis of a variety of biological systems.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

UPGEN778C - University Program in Genetics and Genomics Biological Solutions Module III

Course Description
One of six mini-courses offered sequentially during the fall semester and together cover 24 topics. These courses are part of the core offerings of the University Program in Genetics and Genomics and allow maximum flexibility for a student-designed curriculum. Multiple topics are available during each mini-course and students choose one. The topics address everything from fundamentals of genetics to modern molecular genetic and genomic strategies for the analysis of a variety of biological systems.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
1

Max Units:
1

UPGEN778D - University Program in Genetics and Genomics Biological Solutions Module IV

Course Description

One of six mini-courses offered sequentially during the fall semester and together cover 24 topics. These courses are part of the core offerings of the University Program in Genetics and Genomics and allow maximum flexibility for a student-designed curriculum. Multiple topics are available during each mini-course and students choose one. The topics address everything from fundamentals of genetics to modern molecular genetic and genomic strategies for the analysis of a variety of biological systems.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

UPGEN778E - University Program in Genetics and Genomics Biological Solutions Module V

Course Description

One of six mini-courses offered sequentially during the fall semester and together cover 24 topics. These courses are part of the core offerings of the University Program in Genetics and Genomics and allow maximum flexibility for a student-designed curriculum. Multiple topics are available during each mini-course and students choose one. The topics address everything from fundamentals of genetics to modern molecular genetic and genomic strategies for the analysis of a variety of biological systems.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

UPGEN778F - University Program in Genetics and Genomics Biological Solutions Module VI

Course Description

One of six mini-courses offered sequentially during the fall semester and together cover 24 topics. These courses are part of the core offerings of the University Program in Genetics and Genomics and allow maximum flexibility for a student-designed curriculum. Multiple topics are available during each mini-course and students choose one. The topics address everything from fundamentals of genetics to modern molecular genetic and genomic strategies for the analysis of a variety of biological systems.

Grading Basis

Graded

Course Typically Offered

Fall Only

Units

Min Units:

1

Max Units:

1

VMS502S - Analog Filmmaking and Darkroom Techniques

Course Description

Investigation of experimental cinematographic techniques and darkroom processes. Exercises and lab experiments to inform a final project. Suggested prerequisite: Cinematic Arts 356S.

Grading Basis

Graded

Course Typically Offered

Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE502S ANALOG FILMMAKING AND DARKROOM, ARTSVIS502S ANALOG FILMMAKING AND DARKROOM, DOCST502S ANALOG FILMMAKING AND DARKROOM

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS503S - Graphic Ethnography: Comics as Research

Course Description
Comics offer researchers unique ways to portray time, memory, and speech on the page. In this course, we read global works of graphic ethnography, graphic medicine, comics journalism, and comics theory. We analyze the building blocks of the page and panel, ethics of drawn representations, and more, putting what we study into practice. The final project is a short Durham-based graphic ethnography; graduate students may, instead, integrate graphic narrative into a research project of their own. Interest in visual thinking is required, but no drawing background–comics can employ a wide array of representational strategies. Prerequisite: ICS 195, CULANTH 101D, VMS 202, or a 100-level DOCST course required for undergraduate students.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
4

Max Units:
4

Crosslisted Courses
ICS502S GRAPHIC ETHNOGRAPHY, CULANTH504S GRAPHIC ETHNOGRAPHY, DOCST512S GRAPHIC ETHNOGRAPHY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS505S - Visual Studies from the Global South

Course Description
This seminar shifts the geography of critical theory, introducing interdisciplinary approaches to visual culture and art formulated outside the northern academies of Europe and the United States. Diverse readings introduce how the visual is constituted in sites that have endured colonialism and globalization. Specific topics include: word and image; space, place, and site; media and new technologies; indigenous and Afro-diasporic philosophies; and the raced and gendered body.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST505S VISUAL STUDIES GLOBAL SOUTH, ROMST505S VISUAL STUDIES GLOBAL SOUTH

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS510S - Neosentience: A Potential Future Form of AI and Research Platform Development via Unreal Game Engine

Course Description
Course explores a future form of AI called Neosentience based on mind/brain/body/environment relations (biomimetics). Weekly reports/discussions explore the topic from many perspectives related to different disciplinary understandings exploring humanistic, conceptual, computational & aesthetic paradigms—Conceptual Art. Students explore research driven by their disciplinary interests, feeding into real-world team-based research and discussion. Unreal Game Engine is being developed as a research platform/visualization system – Insight Engine 2.0. Students develop particular aspects of research: focused literature review, write a major research paper and/or define a related digital project.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS666S NEOSENTIENCE: FUTURE AI FORM, ARTSVIS510S NEOSENTIENCE: FUTURE AI FORM, CMAC666S NEOSENTIENCE: FUTURE AI FORM

General Education Curriculum Codes
R - (R) Research, STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, NS - (NS) Natural Sciences

VMS512S - Performing Gender/Exhibiting Race

Course Description
Studying intersections of race/gender in art since 1945 with host of visual subjects and methodological strategies. Examines works by e.g. Barkley L. Hendricks, David Hammons, Adrian Piper, Jean-Michel Basquiat, Faith Ringgold, Kara Walker. Traces theorizing gender/race through historical documents and contemporary writings. Focus on images in documentary and fine art photography; silent and sound film; broadcast television and video art past/present. Assorted critical writings on mass media imagery. Opportunities for introduction of artists, art works, issues external to syllabus.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT512S PERFORM GENDER/EXHIBIT RACE

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance

VMS520 - Eco-Media: Studies in Planetary Futures

Course Description
This course explores film, photography, online media, museum and artistic productions about the contemporary planetary ecological crisis. Visual materials will focus on climate change, environmental activism, plastic and nuclear waste, digital rubbish, 'cancer alleys' and 'cancer villages,' pollution and toxic environments, among other topics. Course readings will introduce students to debates about the Anthropocene, post-human natures, species extinction, multi-species care, geo-engineering, and planetary futures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH520 ECO-MEDIA, LIT522 ECO-MEDIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (CZ) Civilizations, (SS) Social Sciences

VMS520S - Eco-Media: Studies in Planetary Futures

Course Description
This seminar explores film, photography, online media, museum and artistic productions about the contemporary planetary ecological crisis. Visual materials will focus on climate change, environmental activism, plastic and nuclear waste, digital rubbish, 'cancer alleys' and 'cancer villages,' pollution and toxic environments, among other topics. Course readings will introduce students to debates about the Anthropocene, post-human natures, species extinction, multi-species care, geo-engineering, and planetary futures.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH520S ECO-MEDIA, LIT522S ECO-MEDIA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (CZ) Civilizations, (SS) Social Sciences

VMS523S - Imaging a Nation: Japanese Visual Culture 1868-1945

Course Description
Focusing on various visual representations of Japanese national identity at home and abroad during the empire; contending interpretations of 'Japaneseness' and changing discourses on Japanese aesthetics in relation to broader historical developments; examining cultural production, exhibition practices, patronage, nationalism, neo-traditionalism, Pan-Asianism, and the role of visual culture under imperialism.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES566S IMAGING A NATION

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS525S - Art and the Holocaust: Architecture, Art, and Cultural Politics during the Nazi Period

Course Description
This course will analyze the history of the genocide of the European Jews, and its connection to antisemitic art and cultural policy during the Nazi period. With a sound understanding of the development of oppressive policies against the Jews, and looking at a variety of media (painting, architecture, film, photography, design), the course will explore the complicated relationship between developing racist policies and the world war as they impacted and were in turn influenced by artists. Examines not only artists involved in the Nazi state, but also those who resisted in exile or were its victims.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST555S ART AND THE HOLOCAUST, GERMAN565S ART AND THE HOLOCAUST, JEWISHST555S ART AND THE HOLOCAUST, HISTORY531S ART AND THE HOLOCAUST

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS533S - Live Images: Ancient and Medieval Representations of the Divine

Course Description
The study of ancient and medieval works—speaking statues, miraculous icons, moving paintings. Seminar addresses questions of artistic and pictorial agency. Readings include theoretical texts, primary sources, and historical studies.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CLST558S LIVE IMAGES, RELIGION552S LIVE IMAGES, MEDREN507S LIVE IMAGES

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS535S - Camera Asia

Course Description
Examines how the art and technology of photography have changed how we study and understand the historical past, with a focus on China, India, and Japan. Analyzes arrival of the camera as a historical event, along with photographers and studios. Evaluates ways in which the new technology was embraced, and considers how the camera reconfigured attitudes towards the body and gender relations, nation building, war, catastrophes and death.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HISTORY530S CAMERA ASIA, ICS531S CAMERA ASIA, ARTHIST535S CAMERA ASIA, PHOTO535S CAMERA ASIA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, IJ - (IJ) Institutions, Justice & Power: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS536S - Public History and Memory

Course Description
Course examines key themes in the theory and practice of public history, an approach to historical storytelling aimed at audiences outside the academy. Topics may include the politics and ethics of public history; memory and history; monuments and memorialization; and changing modes of presentation from traditional museums to digital platforms. Student projects will use archival and library resources and engage with historic sites and organizations.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS536S PUBLIC HISTORY & MEMORY, HISTORY536S PUBLIC HISTORY & MEMORY

General Education Curriculum Codes
R - (R) Research, CZ - (CZ) Civilizations

VMS539S - Queer China

Course Description
Examines queer discourses, cultures, and social formations in China, Greater China, and the global Chinese diaspora from the late imperial period to the present. Course will focus on cultural representations, particularly literary and cinematic, but will also consider a wide array of historical, anthropological, sociological, and theoretical materials. Not open to students who have taken Asian and Middle Eastern Studies 439.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES539S QUEER CHINA, CULANTH539S QUEER CHINA, GSF502S QUEER CHINA, LIT539S QUEER CHINA, RIGHTS539S QUEER CHINA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

VMS540S - Memory and Documentary Cinema in Latin America

Course Description
Course focuses on work of several leading Latin American filmmakers from Brazil, Chile, Argentina, and Cuba. Explores problems such as construction of memory in the wake of repressive dictatorships, relationship between revolutionary imagination and urban decay in present day Cuba, cinema's potential as a tool for cross-cultural explorations of memory and time, including relationship between past and present and our understanding of 'contemporary.'

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ROMST540S MEMORY/DOC CINEMA LATIN AMER, DOCST540S MEMORY/DOC CINEMA LATIN AMER, LIT544S MEMORY/DOC CINEMA LATIN AMER, LATAMER540S MEMORY/DOC CINEMA LATIN AMER, CINE540S MEMORY/DOC CINEMA LATIN AMER

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS545 - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS539 BLACK CAMERA, CINE545 BLACK CAMERA, ARTHIST539 BLACK CAMERA

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance

VMS549S - Techno-Orientalism: Asian/America, (Post)Human and SF

Course Description
Course examines global Science Fiction genres in literature, film, and social media to understand broad historical and social formations of Otherness, the Alien, Citizenship, (Im)migration. Studies racial assumptions in popular culture, domestic and international law, discourse of the human and human rights, science and technology industries, and other disciplines. Explores intersections of race, gender, sexuality, class, and geopolitical divisions and interactions in Asian/American Studies and Postcolonial Studies from the past to the present.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES549S TECHNO-ORIENTALISM

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (ALP) Arts, Lit & Performance, (CZ) Civilizations

VMS551SL - Advanced Digital Art History: New Representational Technologies

Course Description
Development of research projects in art history, visual studies and material culture expressed by using new technologies to record and communicate complex sets of humanities data from various primary sources. Introduces techniques for the digital presentation and analysis of visual material through a series of interpretative technologies, including the development of web applications; data visualization and analysis; project documentation; and/or database modeling, construction & management. No prior experience with the above is expected. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST551SL ADVANCED DIGITAL ART HISTORY, ISS551SL ADVANCED DIGITAL ART HISTORY

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS552 - Citizen Godard

Course Description
This course explores the complex interactions of poetics and politics in the films of Jean-Luc Godard, from the French New Wave, through the experimental phase of the Dziga Vertov group, to the recent Histoire(s) du cinéma and Film socialisme. Drawing on a wide range of literary and philosophical texts (Merleau-Ponty, Althusser, Deleuze, Rancière), this seminar situates Godard's work within its intellectual and political contexts, investigating how developments in French culture and thought since 1950 have been reflected in - and sometimes anticipated by - Godard's films. In English with preceptorial available in French.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
FRENCH510 CITIZEN GODARD, CINE642 CITIZEN GODARD, LIT510 CITIZEN GODARD

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS555S - Black Visual Theory

Course Description
Approaches to studying and theorizing of African diasporal arts and black subjectivity, with a special emphasis on art historiography, iconology, and criticism, and a particular focus on slavery, emancipation, freedom, and cultural nationalism, as pertaining to peoples of African descent and as manifested in such visual forms as paintings, sculptures, graphics, and media arts from the early modern period to the present, as well as the political edicts, philosophical tracts, autobiographies, and theoretical writings of individuals similarly preoccupied with these ideas. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS589S BLACK VISUAL THEORY

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS557S - Trauma in Art, Literature, Film, and Visual Culture

Course Description
Theories of trauma applied to visual representations of violence, destruction, and pain in contemporary art, film, and literature, examining the topic through multiple subjects from the Holocaust, cults, gangs, racism, and sexual abuse to cultures of trauma. Theories of trauma examined from a variety of sources including clinical psychology, cultural and trauma studies, art, film, and literature, aiming to enable students to gain the visual acuity to identify, understand, and respond to traumatic images with empathy. Not open to students who have previously taken this course as Art History 295S.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST557S TRAUMA IN ART, LIT., FILM & VC

General Education Curriculum Codes
EI - (EI) Ethical Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS558S - Business Strategies for the Arts and Artists

Course Description
Students will learn professional development skills specific to the artistic fields. Students/Artists will learn to develop business plans, write grant applications, learn negotiation skills, how to present their work to the public, develop artists statements, and develop/maintain websites and portfolios. The course will allow the student to sustain themselves as a practicing artist.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS558S BUSINESS STRATEGIES FOR ARTS, THEATRST558S BUSINESS STRATEGIES FOR ARTS, DOCST558S BUSINESS STRATEGIES FOR ARTS

General Education Curriculum Codes
R - (R) Research

VMS559S - Urbanism

Course Description
Introduction to urbanism through considerations of the political, social and economic forces that model urban space. Assessment of the expression in urban topography of state power, disempowered communities, competing ethnicities, religious groups. Readings include canonical works of urban history (Vitruvius, Jacobs), theory (Benjamin, Lefebvre), novels and media (Visconti, Zola).

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS564S - Physical Computing

Course Description
Seminar in physical computing, creative coding, and the emerging artistic possibilities of the Internet of Things. Emphasis on the medial physicality of computation, and exploration of interfaces to the computational that depart from the keyboard, mouse, and screen. Discussion of the social implications of 'smart' objects. Hands-on development of individual and group projects using Arduino, an extension of C/C++, internet-enabled microprocessors, and an array of analog and digital sensors and actuators. Topics also include networking, communication protocols, circuit design, and physical prototyping.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS555S PHYSICAL COMPUTING, ARTSVIS564S PHYSICAL COMPUTING, CMAC564S PHYSICAL COMPUTING

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, QS - (QS) Quantitative Studies

VMS565S - New Media, Memory, and the Visual Archive

Course Description
Explores impact of new media on the nature of archives as technologies of cultural memory and knowledge production. Sustained engagement with major theorists of the archive through the optics of 'media specificity' and the analytical resources of visual studies. Themes include: storage capacity of media; database as cultural form; body as archive; new media and the documentation of 'everyday life;' memory, counter-memory, and the politics of the archive; archival materiality and digital ephemerality. Primary focus on visual artifacts (image, moving image) with consideration of the role of other sensory modalities in the construction of individual, institutional and collective memory.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS565S NEW MEDIA, MEMORY, AND ARCHIVE, CMAC565S NEW MEDIA, MEMORY, AND ARCHIVE

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

VMS567S - Art and Markets

Course Description
Cross-disciplinary art history-visual culture-economics seminar. Analytical and applied historical exploration of cultural production and local art markets, and their emergence throughout Europe, Asia, and the Americas. Criteria for valuation of imagery or what makes art as a commodity desirable or fashionable. Visual taste formation, consumer behavior, and the role of art dealers as cross-cultural negotiants. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST508S ART AND MARKETS, ECON551S ART AND MARKETS

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

VMS571S - Art as Work: Valuing Labor in the Arts

Course Description
Interdisciplinary seminar on work, working identities, and workplace performances in the arts. Enrolled graduates and advanced undergraduates review theories of artistic production, labor, and value across the analytical traditions of cultural labor studies, critical race and feminist studies, dance and performance studies. Analysis of dominant representations of arts labor and entrepreneurship from arts management, administration and policy discourse. Our goal is to highlight institutional pressures that constrain enabling environments for the arts. Culminating research projects analyze and interpret local arts workworlds, including but necessarily students' own.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DANCE561S ART AS WORK, LIT525S ART AS WORK, ARTSVIS571S ART AS WORK, THEATRST561S ART AS WORK

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, EI - (EI) Ethical Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS575S - Generative Media Authorship - Music, Text & Image

Course Description
Covers Generative Media in all its forms. Lectures, workshops, discussions, one semester-length project, shorter individual exercises and readings. Interdisciplinary Graduate Seminar with advanced undergraduates and MFA students with permission of instructor.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS575S GENERATIVE MEDIA AUTHORSHIP, ISS575S GENERATIVE MEDIA AUTHORSHIP, MUSIC575S GENERATIVE MEDIA AUTHORSHIP, CMAC575S GENERATIVE MEDIA AUTHORSHIP

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

VMS576S - Theory & Aesthetics: Roland Barthes

Course Description
How do philosophers read and make sense of literary texts, movies, works of art and other philosophers? This course elucidates key conceptual and hermeneutic articulations under girding a philosophical signature and delineate the status of aesthetic objects in theory. It explores Roland Barthes' thought through 4 of his key theoretical moves: death of the author, reality effect, punctum, the neutre and the ground upon which he deployed them: the realist novel, techniques of cinema & photography, political antagonism, queer subjectivity. Texts to be read in English translation; students encouraged to consult the French originals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT576S THEORY & AESTHETICS, ISS576S THEORY & AESTHETICS, ROMST576S THEORY & AESTHETICS

General Education Curriculum Codes
R - (R) Research, W - (W) Writing, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS580S - Proseminar 1: Interdisciplinary Digital Humanities

Course Description
Multimodal interdisciplinary digital humanities in theory and practice. Research, cultural heritage applications, public outreach. Theoretical and critical perspectives on humanities texts, data, images and other media; archives and exhibitions; visualization; museums; digital mapping and timelines; immersive and interactive media systems; apps and installations. Project-based critique, hands-on exercises, project management, and reflective writing. Interaction with Smith Media Labs projects and collaborators. Attention to digital divides, access and equity issues, global media contexts, sustainability, evaluation best practices, and obsolescence/EOL considerations for digital projects.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS580S DIGITAL HUMANITIES PROSEM 1, ARTHIST580S DIGITAL HUMANITIES PROSEM 1, CMAC580S DIGITAL HUMANITIES PROSEM 1

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS581S - Proseminar 2: Critical Approaches to Computational Media Practice

Course Description
Core studio practice-based course for advanced computational methods; emphasis on development of individual artistic and/or digital research practice through prototyping and critique. Introduction to key paradigms for computational practice that can inflect a variety of creative and scholarly avenues, from experimental documentary to digital art history to generative and algorithmic approaches to digital, physical and interactive media. Specific topics may vary.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS581S COMPUTATIONAL MEDIA PROSEM 2, ARTHIST581S COMPUTATIONAL MEDIA PROSEM 2, CMAC581S COMPUTATIONAL MEDIA PROSEM 2

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, CE - (CE) Creating & Engaging with Art: A&S Curriculum, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS588S - Sculpture Europe to China

Course Description
The course will study the making, collecting and display of sculpture from antiquity to the twentieth century. The participants will consider the idea of sculpture as a European category and the different ways sculpture was understood in the rest of the world, especially China and Asia.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST588S SCULPTURE EUROPE TO CHINA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS590 - Special Topics in Visual and Media Studies

Course Description
Subjects, areas, or themes that embrace a range of disciplines related to visual and media studies.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

VMS590S - Special Topics in Visual Studies

Course Description
Subjects, areas, or themes that embrace a range of disciplines related to visual studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

VMS610S - Basic Concepts in Cinema Studies

Course Description
Review of theory, methodology, and debates in study of film under three rubrics: mode of production or industry; apparatus or technologies of cinematic experience; text or the network of filmic systems (narrative, image, sound). Key concepts and their genealogies with the field: gaze theory, apparatus theory, suture, indexicality, color, continuity.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE610S BASIC CONCEPTS IN CINEMA, LIT610S BASIC CONCEPTS IN CINEMA

General Education Curriculum Codes
(ALP) Arts, Lit & Performance

VMS611S - Third Cinema

Course Description
Exploration of the geopolitics of situatedness and distance as they refer to the film industry, investigating processes of production, distribution, and reception of Hollywood, Third World, and diasporic films, and studying classical and artisanal modes of production in film. Addresses questions of authorship and embodiment; human rights and interventionist filmmaking as they refer themselves to human states of liminality, global movements of populations and capital. Traces the experience of globalization, urbanization, alienation, violence, nostalgia for nature and homeland as represented in the filmic image.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS530S THIRD CINEMA, LIT613S THIRD CINEMA, ICS613S THIRD CINEMA, LATAMER613S THIRD CINEMA, CINE644S THIRD CINEMA

General Education Curriculum Codes
(CCI) Cross Cultural Inquiry, (EI) Ethical Inquiry, (STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance, (SS) Social Sciences

VMS612S - Theories of the Image: The Image in Walter Benjamin

Course Description
Returning to Walter Benjamin's Art Work essay and its various sources and revisions, this course will discuss recent engagements with Benjamin's work in cinema, photography, and visual and media studies and will attempt to understand the role and functions of the faculty he coins 'the mimetic' in modern culture. Readings will be drawn from the English translation of Benjamin's Selected Writings, volumes 1-4, and including his work on photography, history, surrealism and his reviews of writers such as Charles Baudelaire. Readings will also include some of Benjamin's own primary sources, such as the writings of Kracauer as well contemporary discussions of Benjamin's work in academic journals.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT612S THEORIES OF THE IMAGE, GERMAN512S THEORIES OF THE IMAGE, ROMST612S THEORIES OF THE IMAGE, CULANTH500S THEORIES OF THE IMAGE, CINE612S THEORIES OF THE IMAGE

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS613S - Computational Media Studio in Advanced Digital Practice

Course Description
Advanced digital practicum in interactive computational media as vehicle for creative and critical expression. Opportunity to synthesize previous course work in multimedia practice, web/graphic/motion design, 3D modeling/gaming, computer programming. In-depth exploration of computational media production as artistic practice through exercises, projects, and critiques. Acquisition and refinement of expertise in procedural and object-oriented programming, two- and three-dimensional graphics, data visualization, physical computing, AR/VR, and other emergent computational platforms. Sustained engagement with computational ethics.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC613S COMP MEDIA STUDIO ADV DIG PRAC, HCVIS613S COMP MEDIA STUDIO ADV DIG PRAC, ISS613S COMP MEDIA STUDIO ADV DIG PRAC

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance

VMS616S - China As World Picture

Course Description
How does Heidegger's concept 'world picture' become relevant for the epistemological space occupied by a non-Western culture in modern times? This course explores this challenging question by foregrounding the story of modern and contemporary China, in particular China's status as an emblem of the gigantic (in scale, scope, and numbers) on the global scene. Texts to be discussed will include internationally acclaimed films (by Bertolucci, Antonioni, Chen Kaige, Zhang Yimou, Wong Kar-wai, Li Yang, Jia Zhangke, Ann Hui, and others), documentary excerpts, theoretical analyses, historical accounts, and journalistic reports, among other sources.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT617S CHINA AS WORLD PICTURE, AMES616S CHINA AS WORLD PICTURE

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

VMS618S - Theories of the Visual

Course Description
Examines the 'visual' as concept of major concern that traverses the debates of the modern and postmodern periods. Expands from the technological (painting, photography, cinema, television, and computation) to the theoretical and philosophical interpretation of visual culture. Examines major periods: from philosophical critique of visuality in 19th and early 20th c., to the height of cultural theory and criticism up until the 1970s; from the late 20th c. to the contemporary period that includes debates that expand our understanding of visual experience. Ends with introducing work that aims at decentralizing Western thought in the debate.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT618S THEORIES OF THE VISUAL, ARTSVIS618S THEORIES OF THE VISUAL, CINE618S THEORIES OF THE VISUAL, CMAC618S THEORIES OF THE VISUAL, ROMST618S THEORIES OF THE VISUAL

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS620S - Models: Premodern to Posthuman

Course Description
Architectural models may be either powerful small-scale prototypes for buildings or weak copies of powerful archetypes. Consideration of variety of architectural models from urban projects to dollhouses allows historical and theoretical exploration of models' agency. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST620S MODELS: PREMODERN TO POSTHUMAN

General Education Curriculum Codes
R - (R) Research, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS622S - Film-philosophers/Film-makers

Course Description
Examines intersections between film, critical theory, and continental philosophy, from standpoint of spectatorship. Focuses on different approaches to film theory from a philosophical prism, and on different philosophers addressing film as a mediated visual interpretation of reality, the world, our own bodies, and societies within which we reside. Addresses film-making as an act of philosophical thought—of thinking about the world and representing subject's position within the world. Topics include, existential phenomenology, Deleuzian metaphysics, feminism, semiotics, political theory.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT620S FILM-PHILOSOPHERS-FILM-MAKERS, CINE622S FILM-PHILOSOPHERS-FILM-MAKERS, ENGLISH620S FILM-PHILOSOPHERS-FILM-MAKERS, DOCST620S FILM-PHILOSOPHERS-FILM-MAKERS

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance, CZ - (CZ) Civilizations

VMS623S - Media Philosophy: Systems, Information, Capital

Course Description
This course investigates media and media systems through a close analysis of key texts and authors in this field. It draws on and compares scholarship in the field as developed in the German, French and US theories of technology, information and communication, and mediation. This course understands media as much from an engineering point of view as from a philosophical one. It accounts for the specificity of media as information systems and accounts for the historical significance of cybernetics and computation in the development of feedback oriented and interactive systems that have transformed theories of aesthetics and politics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
LIT615S MEDIA PHILOSOPHY, CMAC623S MEDIA PHILOSOPHY

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum

VMS625S - Comparative Media Studies

Course Description
Explores the impact of media forms on content, style, form, dissemination, & reception of literary & theoretical texts. Assumes media forms are materially instantiated & investigates their specificities as important factors in their cultural work. Puts different media forms into dialogue, including print, digital, sonic, kinematic & visual texts, & analyzes them within a theoretically informed comparative context. Focuses on twentieth & twenty-first century theories, literatures, & texts, esp. those participating in media upheavals subject to rapid transformations. Purview incl. transmedia narratives, where different versions of connected narratives appear in multiple media forms.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES627S COMPARATIVE MEDIA STUDIES, LIT625S COMPARATIVE MEDIA STUDIES, ISS615S COMPARATIVE MEDIA STUDIES

General Education Curriculum Codes
(STS) Sci, Tech, and Society, (ALP) Arts, Lit & Performance

VMS632 - Questions of National Cinemas

Course Description
Films, documentaries, television series, and soap operas produced in mainland China in the post-Mao era. Topics include the history and aesthetics of the cinema, soap operas as the new forum for public debates on popular culture, the emerging film criticism in China, the relationship of politics and form in postrevolutionary aesthetics. (Same as AMES 431 but requires extra assignments.) Research paper required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES631 NATIONAL CINEMAS, CINE632 NATIONAL CINEMAS, LIT632 NATIONAL CINEMAS

General Education Curriculum Codes
R - (R) Research, HI - (HI) Humanistic Inquiry: A&S Curriculum, CZ - (CZ) Civilizations

VMS634S - Producing Docu-Fiction

Course Description
Investigation of hybrid, genre-defying films that question traditional definitions of documentary and fiction. Emphasis on experimental forms, documentary reenactment, mockumentary and dramatized 'true stories.' Exploration of both documentary and fiction production techniques, culminating in the production of a final video project. Same as Visual and Media Studies 340S but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE634S PRODUCING DOCU-FICTION

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

VMS635S - 16mm Film Production

Course Description
Hands-on experience with 16mm motion picture film and photography. In-depth exploration of the techniques and aesthetics of film production, including basic screen writing, lighting, story telling, and editing. Each student will produce an individual 16mm film. Same as Visual and Media Studies 362S but with additional graduate level work.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE635S 16MM FILM PRODUCTION

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

VMS640S - Expanded Cinema: Cinema Outside the Movie Theater

Course Description
This project-based course will explore moving image installation practices beyond the movie theater including alternative public spaces, devices, museums, white cubes and back boxes. The course will simultaneously examine relevant artworks in the context of their diverse histories and attendant theories, from early cinema devices, through works termed as Expanded Cinema around the 1970s, to current new media manifestations. Students will focus on developing moving image installation projects of their own, to be realized at various campus locations. Open to seniors and graduate students. Prerequisite: Two 200-level or above photography or film production classes.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS640S EXPANDED CINEMA, CINE639S EXPANDED CINEMA, DOCST640S EXPANDED CINEMA, LIT545S EXPANDED CINEMA

General Education Curriculum Codes
CE - (CE) Creating & Engaging with Art: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS641SL - Narrative Practice in Global Art Cinema

Course Description
Advanced in-depth examination of alternative narrative and doc-fiction practices emerging from national cinemas around the world. Intended for advanced undergraduate and graduate students with prior production experience. Screenings and readings related to significant national cinema movements and practitioners will inform production exercises, writing assignments and a final moving image project.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS641SL GLOBAL ART CINEMA, CINE643SL GLOBAL ART CINEMA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

VMS650S - Black Camera: Still and Moving Images

Course Description
This course interrogates still and moving images by and about people of African descent. Graduate students enrolled in this course will consider film, photography, and media art. Together, we will examine documentary film, daguerreotype and archival photography, black cinema, and the cultural politics that render production, reception and circulation particular for black subjects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS531S BLACK CAMERA, CINE650S BLACK CAMERA, ARTHIST650S BLACK CAMERA, PHOTO650S BLACK CAMERA

General Education Curriculum Codes
CCI - (CCI) Cross Cultural Inquiry, ALP - (ALP) Arts, Literature & Performance

VMS655S - Black Feminist Art & Digitality

Course Description
This course explores tropes, muses and icons of Black femininity in contemporary art. Graduate students enrolled in this seminar will consider diverse media, including photography, collage, craft and assemblage, as well as representations of the Black female body, of beauty and sexuality. In addition to reading canonic works in Black feminist theory, students will explore major works and exhibitions to consider the efforts of Black women art-makers from the 1960s through the 21st century.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AAAS655S BLACK FEMINIST ART

General Education Curriculum Codes
HI - (HI) Humanistic Inquiry: A&S Curriculum, ALP - (ALP) Arts, Literature & Performance

VMS660S - Games, Play, and Selfhood: Immersive Media and Extended Realities

Course Description
Interdisciplinary study of history, theory, criticism, practice of immersive and interactive media, with emphasis on virtual worlds, games, and extended reality. Cross-cultural interpretative frameworks, intersectional theories, comparative approaches across East/West and Global South. Critical examination of the metaverse and playable, interactive environments as analog, historic, and contemporary phenomena. Online selfhood, avatar identities, and digital cultures. Ludology versus narratology, hyperreality, agency, aesthetics. Theories of space, place, memory, gamification, participatory media. Applications in museums, cultural heritage, art, journalism, theater, and popular media. Hands-on testing and digital authoring. Blogs, critical research paper, final projects.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS660S GAMES, PLAY, AND SELFHOOD, CMAC660S GAMES, PLAY, AND SELFHOOD, GSF660S GAMES, PLAY, AND SELFHOOD, AMES660S GAMES, PLAY, AND SELFHOOD

General Education Curriculum Codes
STS - (STS) Science, Technology, and Society, ALP - (ALP) Arts, Literature & Performance, SS - (SS) Social Sciences

VMS685S - Visiting Filmmaker Master Course: Special Topics

Course Description
Intensive production courses with visiting filmmaker. Topics vary by semester. May be taken twice.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE685S VISITING FILMMAKER MASTER CRS

General Education Curriculum Codes
ALP - (ALP) Arts, Literature & Performance

VMS690S - Special Topics in Visual and Media Studies

Course Description
Subjects, areas, or themes that embrace a range of disciplines related to visual and media studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

VMS691 - Independent Study

Course Description
Directed reading in a field of special interest, under the supervision of a faculty member, resulting in a substantive paper or report. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

VMS692 - Independent Study

Course Description
Directed reading in a field of special interest, under the supervision of a faculty member, resulting in a substantive paper or report. Consent of instructor and director of graduate studies required.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

VMS706 - Digital Imaging

Course Description
Photoshop and Illustrator used to introduce single and serial images for print and web output. Graduate students required to create an intensive portfolio of work investigating a relevant research topic. Graduate section offered in conjunction with undergraduate course Visual and Media Studies/Visual Arts 206. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS706 DIGITAL IMAGING, CMAC706 DIGITAL IMAGING, ISS706 DIGITAL IMAGING

VMS708S - The Silent Film: An Introduction

Course Description
The first thirty-five years of cinema as an emerging art form and mode of communication. Aesthetic, technical, and cultural aspects of the medium will be considered in historical context, from nineteenth-century experiments to nascent narrative conventions and the first disruptive avant-garde movements. Focus is on close reading of relevant films. Graduate course will have an additional final research paper.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE708S THE SILENT FILM

VMS709 - Chinese Im/migration: Chinese Migrant Labor and Immigration to the US

Course Description
Comparative examination of contemporary China's 'floating population' of migrant labor, and of Chinese immigration abroad (particularly to the US). Focus on cultural representation of these phenomena (particularly literary, cinematic, and artistic works), but sociological, anthropological, economic, and political perspectives will also be considered. Topics include cultural alienation, marginalization, and assimilation; education and health care; labor and commodification; gender and ethnicity; narratives of modernization and development; together with the ethical, social, and political implications of migration.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
AMES709 CHINESE IM/MIGRATION

VMS710S - Performance Art and Performativity: Theories and Methods

Course Description
Examines critical discourses and theories in performance studies, including performativity, performance collectives, participation, and activism; corporeality and presence; identity and enactment of trauma; technological supplements to performance (from photography, film, and slide projection to television/video, virtual reality and digital and social media); biomedicine in the performance and alteration of gender and sexual roles; performance in the post- or trans-human cyborg age of body enhancement and redesign, uploaded forms of consciousness, implant and wearable computers; and an array of other mental and physical technologies that increasingly render the body ambiguously human.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

VMS718S - Sound in Cinema: Sonic Theories in Film and Media

Course Description
Examination of historical and contemporary debates on the impact of sound in film and various media. Exploration of how artists, scholars, and theorists challenge conventional assumptions about the relationship between image and sound, and the normalized separation of elements that privilege visual over sonic experience. Analysis of sound's political, aesthetic, philosophical, and theoretical implications, and the impact of stylistic approaches to sound design and innovation. Graduate-level students are expected to delve deeper into sound's scholarly and conceptual aspects through original research.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE718S SOUND IN CINEMA, DOCST718S SOUND IN CINEMA, THEATRST718S SOUND IN CINEMA

VMS720S - Art, Media, Technology/Histories, Theories, and Practices

Course Description
Through trans-disciplinary theories, considers technological experiments and multi-disciplinary artistic exploration in post-WWII kinetics, cybernetics, computers, intermedia, expanded cinema, virtual reality, and new media with advent of technoculture, cyberspace, nano- and endo-culture, telematics, telepresence, bioart, artificial life, artificial intelligence, and emergent systems; and how media artists address the ways in which the global military, industrial, communications, computer, and information complex include mind control, surveillance, and infowar, and effect social interactions, and the environment and animals in the creation of the integrated spectacle.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

VMS721S - Motion Graphics for Film and Video

Course Description
An exploration of techniques and theoretical approaches to motion graphics, animation and post-production effects in film and video. Readings and screenings will lead to student-produced exercises through exposure to applications in the Adobe Creative Cloud and digital editing software. Graduate students enrolled in this course, will be asked to complete additional research either in the form of an paper or additional production assignment.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE721S MOTION GRAPHICS

VMS722S - Curatorial Practices in a Global Context

Course Description
History and critical theories of all experimental art from conceptual, performance, and installation to video and multimedia, collectives, and ecological and bioart considered in a global context including international exhibitions, biennials, and new curatorial practices.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST722S CURATORIAL PRACTICES

VMS729S - Experimental Filmmaking

Course Description
Graduate level course covering the history of avant-garde in film and video combined with production exercises. This is a graduate level version of Experimental Filmmaking. The graduate students will be required to complete more advanced assignments and additional projects related to experimental filmmaking.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE701S EXPERIMENTAL FILMMAKING

VMS731S - The Bauhaus: Architecture, Design, Politics

Course Description
This seminar analyzes the history of the Bauhaus, from its roots in Weimar Germany to its impact on framing post World War II international Modernism. It covers major scholarship on Modernism, architecture, and design as well as central questions of twentieth-century art and politics. Grounded in the foundation and activity of the school in Germany after World War I, the seminar will also cover the spread of Bauhaus ideas, faculty, and students internationally including in Japan, Turkey, the United States, and on both sides of the Cold War.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST731S THE BAUHAUS, GERMAN731S THE BAUHAUS

VMS737S - Art and History of Botany

Course Description

This seminar investigates the intertwined histories of art and botany from antiquity to the present. This hands-on seminar traces how methods of botanical visualization changed over time in response to intellectual, epistemic, and technological shifts as well as social and political pressures. Students will learn about the history of art and botany through creative projects, botanical labwork, and field trips to the Duke herbarium, greenhouse, gardens, and special collections.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ARTHIST737S ART AND HISTORY OF BOTANY

VMS739S - Sound For Film and Video

Course Description

Theory and practice of sound recording techniques and strategies for film and video. Focus on sound/image relationship, sound design and sound acquisition. Screenings and readings will reinforce practice exercises. Graduate level assignments and project.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CINE750S SOUND FOR FILM AND VIDEO

VMS740S - Producing Docu-Fiction

Course Description

Investigation of hybrid, genre-defying films that question traditional definitions of documentary and fiction. Emphasis on experimental forms, documentary reenactment, mockumentary and dramatized 'true stories.' Exploration of both documentary and fiction production techniques, culminating in the production of a final video. Graduate-level assignments and advanced project work expected and developed in consultation with the professor.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ARTSVIS740S PRODUCING DOCU-FICTION, CINE702S PRODUCING DOCU-FICTION

VMS741S - The Symbolist Movement in the Arts and European Thought

Course Description

Investigates the relationship linking Symbolist aesthetics and practice with currents in European philosophy in the late nineteenth and early twentieth centuries. The reaction against Positivism; aesthetic idealism and the Platonic tradition; the influence of Schopenhauer and Nietzsche on artists and writers; Symbolism and mysticism (Theosophy, Rosicrucianism, the occult); Symbolism and the Catholic revival; Art nouveau and theories of psychology; the anarchist impulse. Emphasis on visual arts in France, England and Germany; focus on the relationship between word and image in Symbolist poetics.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTHIST741S THE SYMBOLIST MOVEMENT, LIT741S THE SYMBOLIST MOVEMENT

VMS743S - Media and Mediation

Course Description
This graduate seminar introduces students to anthropological scholarship on the politics of media. We begin with classic theoretical works on mass media the early twentieth century and progress to contemporary anthropological scholarship on the interplay between media, culture, and politics. Our seminar will pay particular attention to issues of photography and visuality; media and/of war; technologies of witnessing; the cultural politics of music and sound; media and globalization; social media and grassroots politics. This graduate seminar will focus on professionalizing strategies, culminating in a proto-publishable research paper that draws on class material.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CULANTH743S MEDIA AND MEDIATION, ARTHIST743S MEDIA AND MEDIATION

VMS745S - Brutal Humanism in Postwar Austria: Bernhard, Jelinek, Haneke, Seidl

Course Description
This seminar focuses on four postwar Austrian writers and filmmakers whose work is often described as brutal, even excessively so. Yet behind the cruelty and violence stands an unflinching commitment to unmasking the vulnerability of human existence and the unrelenting search for dignity, meaning, and connection. We will spend approximately three weeks on each figure and read works of literary theory, film theory, cultural studies, and affect theory alongside fiction and film. Primary readings in German; secondary readings in German and English; discussions in English. Students without German reading knowledge may read the primary sources in translation.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
GERMAN745S BRUTAL HUMANISM, LIT745S BRUTAL HUMANISM

VMS748S - Advanced Art Research and Lab Practice

Course Description
Advanced research in the arts, cultural production, studio practice, and experiential inquiry. Students may focus on independent productions with regular advice and facilitation from the instructor, meet as a group to create common projects through lab research and production teams, or develop their own curricular formats in collaboration with the instructor as they produce their most advanced artworks within a research university setting. Interdisciplinary approaches balanced with strong backgroung in specific artistic media. Recommended for graduate students (MA, MFA, PhD).

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS748S ADVANCED ART RESEARCH AND LAB

VMS751S - Narrative Projects

Course Description
Development and production of short narrative film projects. Project-based course taking short film concepts through script development, pre-production, production, and post-production. Prior video production experience recommended. Graduate students will be required to develop an additional production project or submit a supplementary research component for credit in the class.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE751S NARRATIVE PROJECTS

VMS753S - Cinematography II Graduate

Course Description
Course explores the approaches, strategies, motivations, and creative processes that inform cinematography. Elements of cinematic style, visual imagination, and storytelling are discussed and explored through exercises. Students learn the relationships and responsibilities involved in the art, and are guided in the execution of the various canonical and extraordinary working methods involved in traditional, experimental, and modern cinematography. Graduate students will be required to complete summary written and production work befitting their experience. Suggested prerequisite: CINE 749S.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS753S CINEMATOGRAPHY II, CINE753S CINEMATOGRAPHY II, DOCST753S CINEMATOGRAPHY II

VMS755S - Videogame Design and Critique

Course Description
Surveys history, technology, narrative, ethics, and design of interactive computer games. Games as systems of rules, games of emergence and progression, state machines. Game flow, games as systems of pleasure, goals, rewards, reinforcement schedules, fictional and narrative elements of game worlds. Students work in teams to develop novel game-design storyboards and stand-alone games. Exploration of the interplay between narrative, graphics, rule systems, and artificial intelligence in the creation of interactive games. Programming experience not required. Graduate students required to write a critical seminar paper in addition to game design experience.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS755S VIDEOGAME DESIGN AND CRITIQUE, CMAC755S VIDEOGAME DESIGN AND CRITIQUE

VMS757S - Editing for Film and Video

Course Description
Theory, history, and practice of film and video editing techniques. Exploration of narrative, documentary and experimental approaches to structuring moving image materials, using digital non-linear editing. Course work will include screening, reading, writing, editing exercises, and video production projects, culminating in a final class screening. No prior experience necessary. Graduate students will be required to complete more advanced assignments and/or additional projects.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
DOCST757S EDITING FOR FILM AND VIDEO, ISS757S EDITING FOR FILM AND VIDEO, CINE757S EDITING FOR FILM AND VIDEO

VMS760S - Cinematography

Course Description
In-depth investigation of cinematographic techniques and principles for motion picture production. Exercises in both film and high definition digital video. Emphasis on advanced lighting techniques, lensing, camera mobility, set operations and close analysis of master works of cinematography. Graduate students will have a supplemental reading list as determined by the instructor and will be responsible for an additional practice assignment and or/ writing assignment linking course content to graduate thesis work.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CINE749S CINEMATOGRAPHY

VMS770S - Critical Digital Humanities: Theory and Practice

Course Description
Digital Humanities as an interdisciplinary and sometimes contentious 'field' or set of practices connected by their attention to how digital theories and methods transform the production of culture, representation of the past, and shape of artistic practice. Exploration of debates around and critiques of DH as a discipline, interdiscipline, transdisciplinary formation. Hack versus yack, theory versus practice. Emphasis on critical engagement. Future of higher education. Digital divides, inclusion and exclusion, and opportunities for what counts as scholarly work. Intersections with pedagogy, public humanities, artistic practice, activism. Relationship to media and technology studies.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS760S CRITICAL DIGITAL HUMANITIES, CMAC760S CRITICAL DIGITAL HUMANITIES

VMS772 - The Middle East through Film

Course Description

Film as access into the region through a series of direct and poetic connections woven across films viewed, filmmakers featured, and lectures, discussions, and texts read. Using integration of course components and students' weekly responses, an understanding of the region is developed by way of inquiry into and rigorous engagement with cultural production. From feature length films to shorts, the breadth of the work we will engage with includes documentaries, dramas, and less traditional forms. Midterm paper, final project required in the form of one of three potential possibilities subject to approval of proposal: a paper, a talk, or a short film. Graduate-level assignments and projects.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CINE772 THE MIDDLE EAST THROUGH FILM

VMS773S - Russian Language and Culture through Film

Course Description

Study of Russian cultural paradigms and constructs of self and other as demonstrated in Russia and Soviet films, primarily from 1960s to the present. Special attention to the analysis of linguistic constructs and their cultural semantic content as well as comparative analyses of Soviet and Russian culture and Russian and European/American culture. Film and computer technology, as well as access to these technologies and their implementation, are a central part of the cultural context. Includes oral and written presentations and analysis which require the usage of additional film text and secondary critical literature. Prerequisite: Russian 301S or equivalent or consent of instructor.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

CINE773S RUS LANG/CULTURE THROUGH FILM, RUSSIAN773S RUS LANG/CULTURE THROUGH FILM

VMS775S - Recycled Cinema

Course Description

Found footage filmmaking, cinematic appropriation, the use of archival materials in documentaries, and current day internet mashups. Covering early cinema, experimental and documentary cinema, television, and the internet. Key emphasis on practice based assignments with a concurrent focus on the historical impact of the field from seminal moments to the contemporary moment through films and readings on the subject. Graduate students in this course will be required to work on an additional final project at a higher level of complexity based on a proposal created in consultation with, and approved by the faculty.

Grading Basis

Graded

Course Typically Offered

Fall and/or Spring

Units

Min Units:

3

Max Units:

3

Crosslisted Courses

ARTSVIS775S RECYCLED CINEMA, DOCST776S RECYCLED CINEMA, CINE775S RECYCLED CINEMA

VMS781S - Graphic Design in Motion

Course Description
Motion design is the creation of animated graphics using graphic design, typography, advertising, photography, animation, sound and filmmaking. Emphasis will be placed on design, conceptualization and the ability to communicate ideas and work collaboratively. Students will learn the language and principles of graphic design by developing a method for solving design problems, communicating ideas effectively, and creating professional motion design such as title credits, logo animations, and music and experimental videos that can be integrated into film, live performance or web. Photoshop, Illustrator, After Effects, and video editing software will be used. Recommended prerequisite: experience in animation, film and video production, or graphic design.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS781S GRAPHIC DESIGN IN MOTION

VMS788L - Fundamentals of Web-Based Multimedia Communications

Course Description
Multimedia information systems, including presentation media, hypermedia, graphics, animation, sound, video, and integrated authoring techniques; underlying technologies that make them possible. Practice in the design innovation, programming, and assessment of web-based digital multimedia information systems. Intended for students in non-technical disciplines. Graduate version of undergrad course also includes higher-level exploration of Javascript topics and frameworks, WebGL/3D, and data visualization and a more substantive final project than undergrad section.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC740L WEB-BASED MULTIMEDIA COMMUNIC, ISS740L WEB-BASED MULTIMEDIA COMMUNIC

VMS788S - Fundamentals of Web-Based Multimedia Communications

Course Description
Multimedia information systems, including presentation media, hypermedia, graphics, animation, sound, video, and integrated authoring techniques; underlying technologies that make them possible. Practice in the design innovation, programming, and assessment of web-based digital multimedia information systems. Intended for students in non-technical disciplines. Graduate version of undergrad course also includes higher-level exploration of JavaScript topics and frameworks, WebGL/3D, and data visualization and a more substantive final project than undergrad section.

Grading Basis
Graded

Course Typically Offered
Fall Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ISS740S WEB-BASED MULTIMEDIA COMMUNIC, CMAC740S WEB-BASED MULTIMEDIA COMMUNIC

VMS790S - Special Topics in Visual and Media Studies

Course Description
Topics vary by semester. Subjects, areas, or themes that embrace a range of disciplines in the arts and humanities areas.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

VMS793 - Independent Study in Visual and Media Studies

Course Description
Directed reading in a field of special interest, under the supervision of a faculty member, resulting in a substantive paper or report. Instructor consent required.

Grading Basis
Graded

Units

Min Units:
3

Max Units:
3

VMS794L - Interactive Graphics: Critical Code

Course Description
Interactive graphics programming for artists. This class explores object-oriented programming via the P5.js and ML5.js programming environments and develops an appreciation of interactivity and computer graphics as artistic media. Students strengthen their graduate-level artistic practices through an aesthetic and conceptual engagement with interactive art. Graduate-level projects incorporate themes, language, and theory from current practices into works developed throughout the semester. Projects extend p5.js by incorporating additional libraries, the development of backend systems, or the development of additional technologies.

Grading Basis
Graded

Course Typically Offered
Spring Only

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS794L INTERACTIVE GRAPHICS, ISS794L INTERACTIVE GRAPHICS, CMAC794L INTERACTIVE GRAPHICS

VMS795S - Digital Art History/Computational Media Thesis Writing Workshop

Course Description
Support for the writing of the thesis paper through multiple drafts and group discussion. Writing of documentation and reflection of the MA in Digital Art History/Computational Media digital project.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
HCVIS795S MA THESIS WRITING WORKSHOP, ARTHIST795S MA THESIS WRITING WORKSHOP, CMAC795S MA THESIS WRITING WORKSHOP

VMS796L - Media, Arts & Cultures Research Practicum I

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC796L RESEARCH PRACTICUM I, HCVIS796L RESEARCH PRACTICUM I, ISS796L RESEARCH PRACTICUM I

VMS797L - Media, Arts & Cultures Research Practicum II

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC797L RESEARCH PRACTICUM II, HCVIS797L RESEARCH PRACTICUM II, ISS797L RESEARCH PRACTICUM II

VMS798L - Media, Arts & Cultures Research Practicum III

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC798L RESEARCH PRACTICUM III, HCVIS798L RESEARCH PRACTICUM III, ISS798L RESEARCH PRACTICUM III

VMS799L - Media, Arts & Cultures Research Practicum IV

Course Description
Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. Experience exploring computational media technology applications to interdisciplinary lab-based research projects in the arts and humanities. Graduate-level apprenticeship focused on a specific digital project, with measurable outcomes based both on project deliverable and demonstrated computational media competencies as shown through weekly progress reports, blogs, and portfolios. Project management and mentoring of undergraduate research teams under the supervision of the faculty advisor. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
CMAC799L RESEARCH PRACTICUM IV, HCVIS799L RESEARCH PRACTICUM IV, ISS799L RESEARCH PRACTICUM IV

VMS850S - Deleuze: Cinema and Philosophy

Course Description
Examination of Gilles Deleuze's books: CINEMA 1 and CINEMA 2. Exploration of his concepts of the 'movement-image' and the 'time-image' with reference to his other single studies on Bergson, Spinoza, Leibniz, and Nietzsche. Key topics include Deleuze's philosophical interpretation of movement and change, of time and duration, of being and becoming, of expressionism and aesthetics, of subjectivity, of the 'will to power' and the 'eternal return,' of cinema as philosophy, and of ethics. Readings accompanied by assigned films from primary representatives of art, world, and experimental cinema, related to the philosophical questions/material under examination each week.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
ARTSVIS850S DELEUZE: CINEMA & PHILOSOPHY, LIT850S DELEUZE: CINEMA & PHILOSOPHY, ENGLISH860S DELEUZE: CINEMA & PHILOSOPHY, ROMST850S DELEUZE: CINEMA & PHILOSOPHY, CMAC850S DELEUZE: CINEMA & PHILOSOPHY, DOCST850S DELEUZE: CINEMA & PHILOSOPHY, CINE771S DELEUZE: CINEMA & PHILOSOPHY

VMS859S - Roman Catholic Visual Piety in the Modern Era

Course Description
An examination of leading themes, imagery, and visual practices in Catholic devotion to saints since the sixteenth century in Europe, North America and beyond. Instructor consent required.

Grading Basis
Graded

Course Typically Offered
Fall and/or Spring

Units

Min Units:
3

Max Units:
3

Crosslisted Courses
RELIGION859S CATHOLIC VISUAL PIETY, ARTHIST859S CATHOLIC VISUAL PIETY

WRITING591 - Independent Study

Course Description
Directed study in a field of special interest in Writing Studies on an approved topic under the direction of a faculty member, resulting in a substantive written product. Consent of instructor required.

Grading Basis
Graded

Course Typically Offered
Occasionally

Units

Min Units:
3

Max Units:
3

WRITING808 - Certificate of Accomplishment in Teaching Writing in the Disciplines

Course Description
The Thompson Writing Program Certificate of Accomplishment in Teaching Writing in the Disciplines provides a framework for acquiring basic knowledge of writing pedagogy. To allow participants to obtain the certificate in the way that best meets their needs and schedules, core workshops are offered at least once annually. While it will be possible to meet the certificate requirements in a single year, we expect that most students will complete the requirements over a two or three year period. Details available at https://twp.duke.edu/students/graduate/certificate-program.

Grading Basis
Credit / No Credit

Units

Min Units:
1

Max Units:
1